TAMILNADU AGRICULTURAL UNIVERSITY

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TWENTY EIGHTH ANNUAL REPORT

April 1998 to March 1999

compiled by

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1. INTRODUCTION

The twenty eighth Annual Report of Tamil Nadu Agricultural University relates to the period from 01.04.1998 to 31.3.1999 and encompasses the significant development and achievements in the field of education, research and extension activities in agriculture, horticulture, forestry, agricultural engineering and allied fields. To take care of the requirements of the farming community in different locations, there are 32 research stations in the seven agro climatic zones of Tamil Nadu. Apart from this, the Directorate of Extension Education undertake community services directly for farmers through five Krishi Vigyan Kendras and five Plant Clinic centres. The mission of Directorate of Extension Education is to make available information obtained on the basis of research to the students, extension workers and agriculturists and to conduct training programmes for their benefit in cooperation with the concerned government departments. The problems for research are identified during the discussions in the monthly Zonal workshops of each district, interactions with farmers by workers in Transfer of Technology centres, Regional Research and Extension Education council meetings, Farmers Days in various campuses and research stations, Research and Extension council meetings and State Scientific Workers Conferences in Agriculture, Horticulture, Agricultural Engineering, Forestry and Sericulture. Accordingly, the efforts carried out by this University have helped in augmenting the production and productivity of different agricultural and horticultural crops. During the period under report, thirteen new crop varieties and nine new farm implements were released for the benefits of the farming community.

The research efforts of the University continued to be one of the multi disciplinary one and concerted emphasis was given on location specific applied research to solve the field problems. To enable multi disciplinary research, the University established Centres of Excellence. The research findings are incorporated in Crop Production guide every year to update the technologies in this basic and reference document which is used in all levels in the State for bettering the agricultural production and productivity. Development of hybrids for increasing the productivity of crops, organic farming, optimal cropping system for dry lands based on climatology, development of bio pesticides and bio control agents, protected cultivation of vegetables and flowers, development of agricultural machineries, Gene transformation, Post-harvest technology, export management and multi media and multi agency extension approach were continued to be the research priorities. Besides Indian Council of Agricultural Research has initiated a major research programme viz., National Agricultural Technology Project for strengthening the national research system. Indian Council of Agricultural Research has agreed to fund a major project for establishing a team of excellence on biological fertilizers for rice and rice based cropping systems. Several sub projects under different production systems have been sent for funding under National Agricultural Technology Project during the period under report.

For sharing the research information among State Agricultural Universities and other sister institutions, Agricultural Research Information System is functioning

at Coimbatore head quarters and at seven Zonal Research Stations. At each station and main campus, ARIS cell has been established and computers and other accessories supplied by ICAR have been housed and effectively utilised. At main campus, Local Area Net Work is established by connecting computers available in different Directorates / departments / offices. A provision for 96 modes was made. Further E-mail facility has been established at Coimbatore and in other stations the work is in progress.

The curricula and degree programmes in the University are evidently in tune with the demands of the society and also help to turn out graduates with higher standards. Further the University is flexible and the composition of its programmes keeps changing to accommodate new innovation and delete ones which are not in demand. The University library has been linked with the internet facilities and the laboratories are strengthened with modern equipments. Besides field practicals have been strengthened by establishing crop cafeteria, model orchard and nutrition garden.

The Directorate of Extension Education is the main agency of the University that takes care of the out reach activities. The constituent units of Directorate of Extension Education are Communication Centre, Information Centre, Training Division and Video Library. The Communication centre conducts distance education programmes like correspondence courses, farm school on All India Radio, Audio cassette lessons for knowledge and skill upgradation of farmers and answers the farmers queries. The transfer of technology in carried out by the five Krishi Vigyan Kendras and five Plant Clinic Centres.

The Directorate of Students Welfare is functioning in the University since 1994 with the objectives of developing the hidden talents of students in sports, games, cultural events and to create awareness to serve the people by involving them in NSS, NCC etc. Activities like placement services, Entrepreneurship Development Programmes and Industry - Institution - Interaction cell Scheme are taken up. In addition the students are trained in Hostel administration under students counselling, programmes on career guidance viz., guiding students for taking up higher studies in the national and international Universities are extended.

Thus through three pronged approach, Tamil Nadu Agricultural University is serving for the upliftment of the farming community.

The major achievements of the University in the field of research in 1998-99 is outlined in what follows.

The following new schemes were sanctioned and implemented during 1998-99.

University Plan Schemes:

1. Establishment of Transgenic Green House facility, Coimbatore.

2. Study on physiological, bio-chemical and molecular mechanisms of Thermo Sensitive Genic Male Sterility (TGMS) in rice, Coimbatore.

3. Study on Seed Technology of certain annual flowers, Coimbatore.

4 Production of stable Cytoplasmic Genic male Sterile System (CMS) lines and hybrids in sunflower, Coimbatore.

5. Study for improving the yield of irrigated pulses (Blackgram) through plant types selection with increased percent of cross pollination, Aduthurai and Thanjavur.

6. Development of Sera Bank for important virus diseases occurring in Tamil Nadu, Coimbatore.

7. Study on capital formation in Agriculture in selected regions of Tamil Nadu, Coimbatore.

8. Study on factor productivity improvement analysis in Tamil Nadu Agriculture Sector, Coimbatore.

9. Study to improve field persistence of neem products in rice and rice based ecosystem, Aduthurai.

10. Study on capturing the benefits of North East Monsoon rain in Tamil Nadu, Aruppukkottai.

ICAR fully financed schemes :

1. ICAR - National Professor, Madurai.

2. Management of Soil borne pathogens of vegetable crops using flourescent *Pseudomonas* as bio-control agents, Coimbatore.

3. Performance evaluation of drip irrigation system with liquid and water soluble fertilizers for increasing crop productivity and quality of Tomato, Coimbatore.

4. Revolving Fund Scheme - Manufacture and supply of proven agricultural equipments and machinery, Coimbatore.

5. Controlled atmosphere storage of paddy, Kumulur.

6. Research net work for the application of system simulation in agriculture, Coimbatore.

7. Video film production and distribution on cost, Coimbatore.

8. Scheme for establishment of Agriculture Technology Information Centre, Coimbatore.

Government of India Schemes

1. Transfer coefficient of radio nuclides in field crops in food chain pathways, Coimbatore.

2. Bio diversity of spiders in the Western Ghats of Tamil Nadu, Coimbatore.

3. Starting of experimental Agrometerological Advisory Services, Pechiparai.

4. Scheme on Establishment of Insect cell lines for bio-technological application, Coimbatore.

5. Isolation and development of virulent strains of baculo virus of groundnut red hairy caterpillar, Madurai.

6. Hydro economic interaction between tank and well water and possibilities for conversion of tank into percolation pond, Coimbatore.

International Collaborative Schemes :

1. Development of improved management practices for wetseeded and transplanted, Coimbatore.

2. Integrated pest management of leaf weber in Mulberry, Coimbatore.

3. Integrated pest management in spiraling whitefly on Mulberry, Coimbatore.

4. Genetic Engineering of PR5 proteins in rice for the management of major fungal diseases, Coimbatore.

5. Improving the data base on irrigated rice in India for upscaling methane omission, Madurai.

6. Engineering resistance in elite India cultivars to major diseases of rice.

7. Identifying and transferring C & TCM from wild rice species affecting yield, maturity data, drought tolerance and grain quality to cultivated rice, Coimbatore.

8. Genetic engineering of sorghum for resistance to fungal diseases, Coimbatore.

9. Collaborative Project on strategies for vector control, conserving water and increasing food security, Madurai.

10. Collaborative project on role of rural community to common resources management.

11. Collaborative research project on biological control of legume pod borer.

Private Agency Schemes :

1. Research and Development project on Hybrid rice, Coimbatore.

2. Soyabean cultivation in erstwhite Thanjavur district - Problems and prospects, Aduthurai.

3. Studies on persistence and degradation of Acetocholor in rice plant, soil and water and their residues in rice grain and straw, Madurai.

4. Physiological and biochemical effect of Bressinolides on the productivity of rice and groundnut, Coimbatore.

5. Studies on testing Bio-efficacy and persistence of systemic fungicide ANVIL against the sheath blight, groundnut tikka leaf spot and powdery mildew on mango and grapes, Coimbatore.

6. Development of arid tolerant Azospirillum for tea.

7. Evaluation of CCC litocin 10 as residues in cotton, Bhavanisagar.

8. Recycling of primary treated distillery efficient in sugarcane, rice and castor as a source of irrigation.

9. Systematic approach for evolving fertilizer optimum for maximum economic yields in rice based cropping system, Coimbatore.

10. Evaluation of bioefficacy of spinosad and Acetaniprid on pests of cotton, Madurai.

11. Soil and water resources investigation in sugarcane growing areas of parts of Kancheepuram district.

12. Composting of mushroom stem waste and spirit component, Coimbatore.

13. Pneumatic cotton picker.

14. Development of deep trencher attachment to tractor for paired row planting of sugarcane, Coimbatore.

15. Cotton technology dissemination through correspondence course, Coimbatore.

16. Effect of Seshesayee effluent on crop cultivation and land application, Coimbatore.

17. Training programme on diagnostic methods and correction of nutrient and physiological disorders in field crops, Coimbatore.

18. An econometric analysis of cement industry in Tamil Nadu, Coimbatore.

19. Evaluation of sulphur rich materials of Cochin Refineries Ltd., Coimbatore.

20. Agro chemicals studies on the bioefficacy and residue of *Lambda cyhalothren* on bengal gram, blackgram, onion, mango & okra, Madurai.

21. Evaluation study on institutional community biogas plants in Tamil Nadu, Coimbatore.

22. Studies on the bio efficacy and residues of proferrotes drifenthiron metaloxyl and prepilonazole on cardamom, castor and chilli, Madurai.

23. Bio efficacy of diflubenzonon against bollworm complex in cotton and its residue in / on cotton, Madurai.

State Government Schemes

1. Assessment of biomass potentials in Pollachi and Vridhachalam taluks, Coimbatore.

2. Rejuvenation of Hill Banana cultivation in Dindigul district - eradication of bunchy top disease, identification of healthy champs and testing for virus, Periyakulam.

3. Training for Rural Youth of self employment strengthening of training infrastructural facilities, Vridhachalam.

4. Biological control of hilly crop pests and diseases, Vijayanagaram.

5. Development of Wood House Farm, Vijayanagaram.

6. Development of integrated nutrient management to alleviate secondary and micronutrient problem in hill crops, Vijayanagaram.

7. Promotion of new Horticultural species for the Nilgiris district, Vijayanagaram.

8. Micro propagation of Tamarind and Pomegranate and field evaluation of micropropagation banana plants.

9. Quality improvement of cocoons and raw silk, Coimbatore.

10. Assessment of loss of ecology in Palar river basin, Coimbatore.

11. Popularisation of farm based technologies developed by Tamil Nadu Agricultural University among farmers.

Varieties and Farm equipments released

Through sustained efforts made by the scientists of this University, the following new crop varieties and farm equipments were released during the period under question for the benefit of the farming community.

1.	Rice	-	CO 47
2.	Redgram	-	Vamban 2
3.	Redgram	-	APK 1
4.	Greengram	-	CO 6
5.	Groundnut	-	CO 3
6.	Groundnut	-	ALR 3
7.	Cotton	-	MCU 12
8.	Sugarcane	-	COC 99061
9.	Pudia Soundel	-	Introduction
10.	Sweet Potato	-	CO CIPI
11.	French Bean (Poletype)	-	OOTY 1
12.	Fenugreek	-	CO 2
13.	Button mushroom	-	OOTY 1

Farm equipments

1. Ridger seeder
2. Tractor drawn trencher
3. Axial flow pump - model II
4. Fodder sorghum harvester
5. Groundnut thresher
6. Groundnut harvester
7. Stirrer mechanism for starch settling tanks of Tapioca
8. TNAU noon meal chulha
9. TNAU Sakthi biogas plant

Besides several crop management technologies were also developed for furthering the production and profit of the farming community. The important among them are furnished as under.

Trials laid out with SWMRI prototype drum seeder during Kuruvai and Samba seasons revealed that sowing through drum seeder modified by SWMRI saves considerable labour force and results in higher grain yield due to timely sowing even under occasions of labour scarcity. There is a saving of Rs. 2,125/ha in the cost of cultivation as compared to conventional planting. Besides yield increased upto 400 kg/ha under drum seeding over conventional planting.

Maximisation of yield in rice hybrids and varieties conducted at Coimbatore during Kuruvai and Thaladi seasons from 1995-98 revealed that maximum yield of

7,655 kg/ha and 7,072 kg/ha was obtained by adopting a population of 100 hills / m^2 (10 x 10 cm) with a fertilizer dose of 200 : 75 : 100 kg NPK / ha in short duration CORH1 hybrid and ASD 18 respectively as against the recommended practice (61 hills / m^2 with 100 : 50 : 50 kg NPK / ha) naving recorded 5.7 and 5.0 t/ha respectively.

Application of 112.5 N/ha in three splits viz., 50 kg N /ha at transplanting, 31.25 kg N at active tillering (21 DAT) and 31.25 kg N at panicle initiation (46 DAT) recorded the higher grain yield of 6.6 and 5.5 t/ha with and without green leaf manure (daincha - 6.25 t /ha) applications respectively in Trichy under salt affected soil having a pH of 9.0.

Insitu incorporation of daincha 12 t/ha coupled with 50 percent of inorganic N plus Azospirillum to rice CO43 registered the highest grain yield (6,897 kg/ha), higher net return (Rs.22,187 / ha) and higher cost benefit ratio (1:2.93) at Madurai.

Among the intercrops trial at Paramakudi, Kudhiraivali recorded the highest grain yield of 500 kg/ha when it was intercropped with paddy culture PM9405 at 6:2 ratio.

Seed treatment with commercially available, *P.fluorescens* strain Pf1 at 10 g/kg of seed followed by foliar application at 0.2 percent (1 kg/ha) at 45,55 and 65 days after transplanting besides controlling root nematode also controlled the white tip nematode showing only 6.06 percent chaffiness as compared to 13.9 percent in untreated check with a higher cost benefit ratio 1:6.0.

Need based application of botanicals (No) on 50 percent ETL resulted in a favourable balance of pest and biocontrol agent. The spider population ranged from 15.0 to 30.4 per 20 hills as compared to 7.0 to 14.2 spiders per 20 hills in need based application of insecticides.

Among the three sources of P trial at Paiyur in Paiyur 2 sorghum, application of 40 kg/ha of DAP recorded the highest grain yield of 1,429 and 1,391 kg/ha with and without phosphobacteria respectively. The blanket recommendation of 20 kg/ha of super phosphate recorded only 1,146 kg/ha.

In the experiment on fertilizer management of micro watershed for sustainable productivity in dryland in K8 sorghum, the application of green leaf manure(sunn hemp) alone at 40 kg N / ha recorded highest grain yield of 1,273 kg/ha followed by the application of FYM at 40 kg N /ha (1,114 kg/ha).

Multilocation experiments conducted for the management of insect pests of sorghum revealed that application of Neem seed kernel extract 5 percent, TNAU Neem oil 60 EC(C) 3 percent and Neem Azal 1 percent were highly effective in reducing the shootfly damage, population of headbug and midge and increasing the yield.

Seed treatment with *T.harzianum* and *P.fluorescens* of 10g/kg reduced cumbu downy mildew incidence upto 65 DAS .

At Trichy, application of coirpith of 10 t/ha with 75 percent of soil test recommendations (52.5 kg N/ha) along with seed cum soil application of Azospirillum recorded the highest grain yield 3.9 t/ha by TRY 1 ragi in salt affected soil by utilizing the irrigation water having the pH of 9.

Field experiments conducted with Samai Paiyur 1 indicated that the application of 20 kg Zn SO_4 / ha, 10 kg Fe SO_4 / ha and 5 kg Cu SO_4 / ha registered the highest grain yield of 965 kg/ha.

Among the different dates of sowing in the short duration redgram variety APK 1, early sowing during September first fortnight has recorded significantly higher grain yield (812 kg/ha) and B-C ratio of Rs.3.48:1.00 at Aruppukottai. Among the various population level trial.4.0 lakh plants/ ha at 25 x 10 cm spacing recorded the highest grain yield (389 kg/ha) and B-C ratio of Rs.1.74:1.00

On farm trials conducted during 1998 in 10 locations in Pudukottai district revealed that application of Zn SO_4 at 25 kg/ha recorded higher yield in blackgram in all locations. Application of Zn SO_4 at 25 kg /ha along with the recommended NPK recorded higher mean B-C ratio of 2.22:1.00 where as the B-C ratio was 1.84:1.00 without Zn SO_4 applications. Hence application of Zn SO_4 at 25 kg/ha can be recommended for irrigated black gram and greengram for the lateritic soils of Pudukottai area.

Studies conducted on the effect of different phenolic acids on the growth and yield of blackgram (CoC) at Coimbatore indicated that the foliar spray of salicylic acid or benzoic acid 100 ppm on 30th and 45th day enhanced the pod yield by 24 and 21 percent respectively over control.

Foliar spray of salicylic acid (100) ppm at the rate of 50g / 500 litres(ha) on 30th and 45th day in greengram (CO5) enhanced the grain yield by 16.4 percent over control. The increase in yield was due to higher leaf area, dry matter and pods.

Combined soil application of Fe SO_4, Zn SO_4 and Borax at 10, 5 and 1 kg/ha respectively to groundnut enhanced the net return by 21.5 percent against control and return per rupee invested was also higher (2.24 :1.00)

Field experiments conducted during Rabi 1988 at Vridhachalam in groundnut revealed that crop raised under broad-bed-furrow with polythene mulch recorded maximum pod yield of 2,329 kg/ha followed by flat bed without polythene film mulch (2,037 kg/ha) and broad bed furrow without polythene mulch (1,762 kg/h)

Sesamum seeds pelleted with Zn So_4+Mn So_4 @ 1 g/kg with azospirillum 120g/kg has recorded the highest seed yield of 369 kg/ha which is 7.0 percent increase over control at Tindivanam during cold weather season of 1997. During the summer irrigated season in 1998, the same treatment recorded the highest seed yield of 583 kg/ha which is 8.2 percent increase over the control.

Studies carriedout to find out the effect of sunflower stalk incorporation on the succeeding soybean crop revealed that incorporation either naturally

decomposed or decomposed by treating with *Trichoderma viride* or cowdung slurry (10 percent) did not have deleterios effect.

At Veppankulam, highest nut yield (173 nuts / palm) in adult coconut palm (VHC 2) was recorded by application of 1.0 :0.25:2.0 NPK kg/palm /year followed by 1.0 :0.50:1.0 NPK kg/palm /year with 168 nuts /palm /year.

In cotton, application of *Azospirillium* and *Trichoderma viride* registered an yield of 1,300 kg/ha where as when these two organisms, were combined with imidachloprid, the yield was reduced to 944 kg/ha indicating the adverse effect of chemical on bio inoculants.

At Coimbatore, application of recommended dose of NPK at 80:40:40 kg/ha in two splits on 40 and 60 days after sowing without any basal application resulted an increase in yield by 23.6 percent over recommended practice of application of 40:40:40 kg NPK /ha as basal and 40 kg N as top dress on 45 days after sowing.

Application of rock phosphate at 200 kg/ha or DAP 100 kg + Gypsum 200 kg per ha during monsoon seasons will help in rejuvenation of degraded pastures in semiarid regions.

Surge irrigation studies conducted with sunflower CO 2 with soil amendment viz., Coirpith and FYM indicated that irrigation method did not influence the grain yield. But considering soil amendment, coconut coir waste application with extra of 25% NPK produced significantly higher yield (1,398 kg/ha) as compared to FYM treatment (1,339 kg/ha).

Irrigation management under varying levels and methods of irrigation conducted with Jasmine revealed that irrigation at 1.00 IW/CPE ratio through ridges and furrows method recorded the highest flower yield of 3,436 kg/ha with a water use efficiency of 2.89 kg/ha/mm.

A study to assess the level of participation of rural women in IRDP in Madurai district revealed that majority of the respondents were aware of village level development works and had low awareness about the higher level developments works. Rural women actively participated in the economic development programmes in the organisation phase with high level of participation but it was medium in supervision and low participation in planning the programme activities.

To improve the yield and quality of Pomegranate, application of Dolomite 945 g/time/tree during January and July along with 600:300:600g N, P_2O_5 and K_2O in two equal split doses during March and September increased the yield (13.08 kg/tree) and fruit quality parameters like T.S.S.(13.54%) and ascorbic acid content (14.92 mg/100 ml of juice).

For the control of pepper wilt dis ase with bio control agents soil application of *Trichoderma viride* at 200g/ vine we ghly effective (100 per cent in controlling quick wilt disease. The nest best ment was boardeaux mixture (1% soil drenching).

Focus for 1998-99

EDUCATION

- Accessing the needs of market and reorienting the current academic programme.
- Modifying the programmes with focus on International standards so as to attract students from other developing countries.

RESEARCH

- Encouraging the students to move between research stations and teaching campuses in order to carryout both field and laboratory experiments by placing the students in research stations after course work.
- Carrying out the research in frontier areas like biotechnology, plant molecular biology, genetic engineering etc.,

EXTENSION EDUCATION

- Strengthening the linkages with the University research and Education in terms of feedback of field problems .

2. ADMINISTRATION

OFFICERS OF THE UNIVERSITY :

1. Chancellor	: Her Excellency Justice M.FATHIMA BEEVI, The Governor of Tamil Nadu
2. Pro-Chancellor	:Thiru.VEERAPANDI S.ARUMUGAM Hon'ble Minister for Agriculture
3. Vice-Chancellor	: Dr.A.Abdul Kareem
4. Registrar	: Dr.S.Purushothaman (Upto 30.09.1998) : Dr.P.C.Sundara Babu i/c (From 01.10.1998)
5. Controller of Examinations	: Dr.P.Rajasekaran
6. Director of Research	: Dr.T.V.Karivaradaraaju
7. Director of Extn.Education	: Dr.K.Chandrakandan
8. Dean(Agri), Coimbatore	: Dr.S. Kannaiyan
9. Dean(P.G.Studies), Coimbatore	: Dr.P.P.Ramaswami
10. Dean,College of Agricultural Engineering, Kumulur	: Dr.M.Balasubramanian
11. Dean, College of Agricultural Engineering,Coimbatore	: Dr.V.V.Sreenarayanan
12. Dean,Horticultural College and Res.Institute, Periyakulam	: Dr.R.S.Azhakiamanavalan
13. Dean, Horticultural College and Res.Institute, Coimbatore	: Dr.S.Thamburaj
14. Dean,Anbil Dharmalingam Agrl.College and Res.Instt., Tiruchirappalli	: Dr.K.Rajukkannu
15. Dean,Forest College and Research Institute, Mettupalayam	: Prof.S.Balaji,I.F.S.

16. Dean, Agricultural College and Research Institute, Madurai	: Dr.A.Regupathy
17. Dean,Agricultural College and Research Institute,Killikulam	:Dr.A.Mohamed Ali
18. Dean,Pandit Jawaharlal Nehru College of Agriculture and Research Institute, Karaikal	: Dr.A.Mohamed Hanifa
19. Director, Centre for Plant Breeding and Genetics, Tamil Nadu Agrl.University Coimbatore	: Dr.M.Rangaswamy (Upto 30.06.1998) :Dr.R.Sethupathi Ramalingam i/c (From 01.07.1998)
20. Director, Soil & Crop Management Studies, Tamil Nadu Agrl. University, Coimbatore.	: Dr.C.Ramaswami (Upto 09.04.1998) Dr.T.V.Karivaradaraaju i/c (From 10.04.1998)
21. Director, Centre for Plant Protection Studies, Tamil Nadu Agrl.University, Coimbatore.	: Dr.P.C.Sundara Babu
22. Director, Centre for Agrl. and Rural Development Studies, Tamil Nadu Agrl. University, Coimbatore.	: Dr.C.Ramasamy
23. Director, Water Technology Centre, Tamil Nadu Agrl.University, Coimbatore.	: Dr.A.Rajagopal
24. Director, Centre for Plant Molecular Biology, Tamil Nadu Agrl.University, Coimbatore.	: Dr.S.Sadasivam
25. Director, Tamil Nadu Rice Research Institute, Aduthurai.	: Dr.M.Subramanian
26. Director of Publications, Tamil Nadu Agrl.University, Coimbatore.	:Dr.L.D.Vijendra Das

27. Director of Students Welfare, Tamil Nadu Agrl.University, Coimbatore.	: Dr.R.Sethupathi Ramalingam
28. Director, Planning and Monitoring Tamil Nadu Agrl.University, Coimbatore	: Dr.S.R.Subramanian (Upto 31.10.1998) Dr.C.Ramasamy i/c (From 01.11.1998)
29. Estate Officer	: Th.M.Mohammed Huzzain Sait
30. Comptroller	: Th.N.Sivakumar

Meeting of the Board of Management (1998-99)

115th Meeting held on 09.07.1998 at Coimbatore Main Campus.
116th Meeting held on 04.12.1998 at HC &RI, Periyakulam.
117th Meeting held on 04.02.1999 at Coimbatore Main Campus.

Important Decisions of the Board 115th Meeting held on 09.07.1998

01. Prof.K.Fazalullh Khan, Retired Additional Director of Agriculture, Chennai, a non-official Member of the Board of Management, nominated to serve as a Member in the Finance Committee of the University.

02. The Board approved the organisation of a short term training programme in tissue culture by charging a fee of Rs.6,000/- to the private entrepreneurs and farmers in the Directorate of Centre for Plant Molecular Biology.

116th Meeting held on 04.12.1998

01. The Board approved the conferment of Honorary Degree of Doctor of Science on Dr.Ismail Serageldin, Chairman, Consultative Group on International Agricultural Research (CGIAR), World Bank, Washington, D.C.

02. The Board approved the change of nomenclature of the Department of Seed Technology as "Department of Seed Science and Technology"

03. The Board approved the construction of Generator rooms and purchase of Generator sets at a total cost of Rs.49,86,036/-

04. The Board approved the entrustment of the following civil works costing less than Rs.20.00 lakhs to the State Department of Agricultural Engineering.

i) Land Levelling.
ii) Construction of percolation ponds.
iii) Well excavation.
iv) Construction of checkdams and
v) Construction of Seed Godown.

117th Meeting held on 04.02.1999

01. The Board approved the conferment of Degrees for 1140 candidates at the Twentieth Annual Convocation on 05.02.1999.

02. The Board approved the institution of endowments with an amount of Rs.20,000/- each for the annual award of prizes in honour of distinguished Chief Guest and Special Guest.

03. The Board approved the starting of a private College in the name of Adiparasakthi Agricultural College at Kalavai in Vellore District by the Adiparasakthi Charitable, Medical, Educational, and Cultural Trust, Melmaruvathur.

04. The Board approved the starting of B.Sc.(Hort.) Degree programme at Pandit Jawaharlal Nehru College of Agriculture and Research Institute, Karaikal.

The Board through circulation Agenda No.89/98 approved the purchase of High Instrument for measuring the fibre quality parameters of Cotton and accessories at a total cost of Rs.20,83,100/- under Tamil Nadu Agricultural Development Project. (TNADP).

The Board through circulation Agenda No.91/98 approved the purchase 10 Numbers of Mahindra 5 door - Hand Top diesel Jeep at a cost of Rs.34.22 lakhs under Tamil Nadu Agricultural Development Project (TNADP).

MEMBERS OF THE BOARD OF MANAGEMENT

1. Thiru N. Athimoolam, I.A.S.,
   Secretary to Government,
   Agriculture Department,
   Fort, St. George, Chennai - 600 009.

2. Thiru.P.V.Rajaraman, I.A.S.,
   Secretary to Government,
   Finance Department,
   Fort,St. George, Chennai - 600 005.

3. Dr.K,Arumozhi,I.A.S.,
Director of Agriculture,
Chepauk, Chennai - 600 005.

4. Thiru.Vikram Kapur, I.A.S.,
Director of Horticulture and
Plantation Crops,
Chepauk, Chennai - 600 005.

5. Thiru V.R.Chitrapu,I.A.S.,
Principal Chief Conservator of Forests,
Panagal Buildings, Saidapet,
Chennai - 600 015.

6. Er.V.Venkataraman,
Chief Engineer (Agrl.Engineering),
328, Anna Salai, Nandanam,
Chennai - 600 035.

7. Thiru A.R.Santhanakrishanan,
Managing Director,
S & S Industries and Enterprises,
158, Arcot Road (3rd Floor),
(Near Kamala Theatre),
Vadapalani,
Chennai - 600 026. Upto 24.01.1999

8. Thiru A. Ambalavanan,
S/o Annamalai Mudaliar,
3/.59-A, Sikkal and Post,
Nagapattinam - 611 108. From 25.01.1999

9. Thiru A. Krishana,
Managing Director,
Cauvery Sugars and Chemicals Limited,
No.10, I[st] Trustlink Street,
R.A.Puram, Chennai - 600 028. Upto 24.01.1999

10. Thiru A.D.Jeyam Pandian,
Chairman and Managing Director,
Pandian Estates Private Limited,
No.14, K.K.Nagar Main Road,
Madurai - 625 020 From 24.01.1999

11. Thiru B. Arunkumar,M.L.A.,
(Mettupalayam Constituency),
3-A, Electricity Board Street,
Co-operative Colony, Mettupalayam -641 301.

12. Dr.S.M. Ilyas,
Asst.Director General (IPI),
Indian Council of Agricultural Research,
Krishi Bhavan,
New Delhi - 110 001.

13. Dr.Bal Kishore Tripathi,
Director,
Sugarcane Breeding Institute,
Coimbatore - 641 007. From 30.05.1998

14. Thiru M.A.Jamal Moideen Papa,
"Pappa" Farm,
Vilar,
Thanjvur - 613 006.

15. Thiru S.K.M.Maeilanandhan,
Chairman and Managing Director,
SKM Animal Feeds and Foods (India) Ltd.,
180, Gandhiji Road,
Erode - 638 002. From 30.05.1998

16. Dr.Manmohan Attavar,
Chairman and Managing Director,
Indo-American Hybrid Seeds (India) Pvt.Ltd.,
Post Box No.7099,
17th Cross 11-A, K.R.Road,
Bangalore - 560 070.

17. Tmt.Shanthi Santhanam,
W/o Thiru G.Santhanam, I.A.S.,
District Collector,
Race Course,
Coimbatore - 641 018. From 30.05.1998

18. Prof.K.Fazlullah Khan,
Retd.Addl.Director of Agriculture,
A.C.52, 4th Street,
Anna Nagar,
Chennai - 600 040. From 30.05.1998

ACADEMIC COUNCIL MEMBERS

1. Dr.A.Abdul Kareem,Ph.D., :Ex-officio Chairman
Vice-chancellor,
Tamil Nadu Agricultural University,
Coimbatore - 641 003.

2. Dr.P.C.Sundara Babu,Ph.D., : Ex-officio Secretary
Registrar (Addl.Charge),
Tamil Nadu Agricultural University,
Coimbatore - 641 003.

3. Th.N.Athimoolam,I.A.S.,
Secretary to Government,
Fort St.George,
Chennai - 600 009.

4. Dr.A.S.Prabhakar,Ph.D.,
Director of Instruction (PGS),
University of Agricultural Sciences,
Krishi Nagar,
Dharwad - 580 005. (Karnataka)

5. Dr.(Mrs.) R.Vatsala,
Dean of Home Science,
Acharya N.G. Ranga Agricultural University,
Rajendranagar,
Hyderabad - 500 030.

6. Prof.S.Kondas, I.F.S. (Retd.),
Formerly Principal Chief
Conservator of Forests,
No.2, Jayammal Street,
Shenoy Nagar,
Chennai - 600 030.

7. Dr.R.Annamalail,Ph.D.,
Professor and Head,
Dept. of Agrl. Extension and Rural Sociology,
CARDS, TNAU,
Coimbatore - 641 003.

8. Dr.T.Thangaraj,Ph.D.,
Professor and Head,
Dept. of Spices and Plantation Crops,
Horticultural College and Research Institute,
Coimbatore - 641 003.

9. Dr.R.Manian,Ph.D.,
Professor and Head,
Department of Farm Machinery,
College of Agricultural Engineering,
Coimbatore - 641 003.

10. Dr.(Mrs.) A.Susheela Thirumaran,Ph.D.,
Professor and Head,
Dept. of Food Science and Nutrition,
AC & RI , Madurai - 625 104.

11. Dr.P.Rangasamy, Ph.D.,
Professor and Head,
Department of Agrl.Botany,
AC & RI, Madurai - 625 104.

12. Dr.M.G.Dasthagir,Ph.D.,
Professor and Head,
Forest College and Res.Institute,
Mettupalayam - 641 301.

13. Dr.S.Kannaiyan,Ph.D.,
Dean (Agri),
Agricultural College and Res.Institute,
Coimbatore - 641 003.

14. Dr.P.P. Ramaswami, Ph.D.,
Dean (PGS),
Tamil Nadu Agricultural University,
Coimbatore - 641 003.

15. Dr.S.Thamburaj,Ph.D.,
Dean (Hort.)
Horticultural College and Res.Institute,
Coimbatore - 641 003.

16. Dr.V.V.Sreenarayanan,Ph.D.,
Dean,
College of Agricultural Engineering,
Coimbatore - 641 003.

17. Dr.A.Regupathy,Ph.D.,
Dean,
Agricultural College and Res.Institute,
Madurai - 625 104.

18. Dr.A.Mohamed Ali, Ph.D.,
Dean,
Agricultural College and Res.Institute,
Killikulam,
Vallanad Post - 628 252,
Toothukkudi District.

19. Dr.K.Rajukkannu,Ph.D.,
Dean,
Anbil Dharmalingam Agrl.College and Res.Instt.,
Navalur Kuttapattu,
Tiruchirappalli - 620 009.

20. Dr.R.S.Azhakiamanavalan,Ph.D.,
Dean,
Horticultural College and Res.Institute,
Periyakulam -625 604

21. Dr.M.Balasubramanian,Ph.D.,
Dean,
College of Agricultural Engineering,
Kumulur - 621 712,
Via. Poovalur, Lalgudi Taluk,
Tiruchirappalli District.

22. Prof.S.Balaji.I.F.S.,
Dean (Forestry),
Forest College and Res.Institute,
Mettupalayam - 641 301.

23. Dr.A.Mohammed Hanifa,Ph.D.,
Dean,
Pandit Jawaharlal Nehru Agriculture
College and Research Institute,
Nedungadu Post,
Karaikal - 609 603.

24. Dr.T.V.Karivaradaraaju,Ph.D.,
Director of Research,
Tamil Nadu Agricultural University,
Coimbatore - 641 003.

25. Dr.S.Sadasivam,Ph.D.,
Director,
Centre for Plant Molecular Biology,
Tamil Nadu Agricultural University,
Coimbatore - 641 003

26. Dr.C.Ramasamy,Ph.D.,
Director (CARDS),
Tamil Nadu Agricultural University,
Coimbatore - 641 003.

27. Dr.K.Chandrakanthan,Ph.D.,
Director of Extension Education,
Tamil Nadu Agricultural University,
Coimbatore - 641 003.

28. Dr.P.C.Sundara Babu,Ph.D.,
Director,
Centre for Plant Protection Studies,
Tamil Nadu Agricultural University,
Coimbatore - 641 003.

29. Dr.A.Rajagopal,Ph.D.,
Director,
Water Technology Centre,
Tamil Nadu Agricultural University,
Coimbatore - 641 003

30. Dr.T.V.Karivaradaraaju,
Centre for Soil and Crop Management Studies,
Tamil Nadu Agricultural University,
Coimbatore - 641 003.

31. Dr.C.Ramasamy,
Planning and Monitoring,
Tamil Nadu Agricultural University,
Coimbatore - 641 003.

32. Dr.L.D.Vijendra Das,Ph.D.,
Director of Publications,
Tamil Nadu Agricultural University,
Coimbatore - 641 003.

33. Dr.R.Sethupathi Ramalingam,Ph.D.,
Director,
Students Welfare,
Tamil Nadu Agricultural University,
Coimbatore - 641 003.

34. Dr.M.Subramanian,Ph.D.,
Director,
Tamil Nadu Rice Research Institute,
Aduthurai 612 101

35. Dr.R.Sethupathi Ramalingam,
Centre for Plant Breeding and Genetics,
Tamil Nadu Agricultural University,
Coimbatore - 641 003.

36. Dr.P.Rajasekaran,Ph.D.,
Controller of Examinations,
Tamil Nadu Agricultural University,
Coimbatore - 641 003.

MEETINGS ON THE ACADEMIC COUNCIL DURING 1998-99 (AC.80 AND AC.81)

The Academic Council met twice during the period (01.04.1998 to 31.03.1999). The 80th meeting was held on 14.09.1998 and 81st meeting on 04.02.1999. The following important decisions were taken :

01. Approved the proposal to increase the duration for mid-semester examination of the Engineering courses only from one hour to two hours.

02. Approved the formation of a Committee with Faculty Members and External experts to prepare syllabus for four year Programme of B.Sc.(Home Science) in line with the details and guidelines developed by ICAR and take steps to reorient the course as professional programme as followed in other State Agricultural Universities with four year duration.

03. Recommended the implementation of Unit Officer System with the senior Professor as the Unit Officer at College of Agricultural Engineering,Kumulur.

04. Approved the proposal of preparation of a common manual with inclusion of the guidelines in detail regarding the activities the students should do in Village Stay Programme and the proforma for collection of data.

05. Offering of the new commercial agricultural courses viz., i) Bee-keeping, ii) Production of *Trichoderma viridi* and *Pseudomonas*, iii) Sericulture were approved.

06. Approved the proposal of giving training to the teachers to operate computers and latest Audio Visual Systems at Computer Centre and Department of Agricultural Extension and Rural Sociology. Recommended multi training for teachers when facilities are created or elsewhere in other institutes.

07. Accepted and approved the revised syllabus for Diploma in Agriculture proposed by the Board of Studies (Agriculture).

08. Noted for information the amendments issued to the G.O.Ms.No.37, Agri.dated 18.02.1998 for collecting special fee and other fees for the B.Tech. (Food Process Engineering) Degree Programme in Govt Lr.No.24828/AU/98-2 dated 23.07.1998 and recommended the same for information of the Board of Management for implementation in the University.

09. Approved the following rules of prizes and medals :

1. Dr.A.Appadurai Award
2. Dr.(Mrs.) Rani Perumal Award
3. Dr.R.Rathnaswamy Award
4. Ibrahim Mohammed Doka Mohammed and Kenana Sugar Company Limited Prize (College prize for ADAC & RI, Tiruchirappalli)
5. Bharathiyar Endowment Award
6. Chancellor M.Fathima Beevi Award
7. Chief Guest Dr.M.Yusuf Kamal Award
8. Special Guest Dr.R.S.Paroda Award
9. Dr.Kalaignar M.Karunanithi Award

Given the following guidelines for immediate implementation :

10. "The TNAU Staff members cannot act as guides to the students of other Universities under MOU is available between the two institutes".

11. Accepted the proposal of including the Controller of Examinations in the Board of Studies and in all other academic bodies and recommended the same to the Board of Management for recommending for further amendment in the ASR &R of TNAU.

12. Considered the results declared from 21.02.1998 to 31.07.1998 in respect of UG,PG and Diploma in Agricultural Courses of TNAU and recommended to Board of Management for approval.

13. Decided to hold the XX Annual Convocation in the first quarter of 1999 and recommended to the Board of Management to confer the Doctor of Science (Honoris Causa) Degree on Dr.Ismail Serageldin, Chairman, CGIAR, World Bank, Washington, USA for approval.

14. Approved the change of the name of the Department of Seed Technology into Department of Seed Science and Technology and recommended to the Board of Management for information.

15. Approved to constitute a Committee under the chairmanship of the Registrar, and Deputy Registrar (Education) as convenor to update the existing P.G.Rules and Regulations.

16. Recommended that if a student does not turn out for final viva-voce fixed by the Chairman, with the approval of the Dean(PGS) on the date, re viva-voce will be conducted after collecting a penalty of Rs.1,000/- from the student or the cost of the conduct of the re-viva-voce whichever is lower.

17. Approved that when the M.Sc.or Ph.D. students who discontinued for more than two semesters join for continuing the studies, the fee of the existing semester in which he/she is joining may be collected instead of the old rates of the fees of discontinued semesters.

18. Amended the existing qualification for admission to M.Sc.(Sericulture)

19. The proposal for increasing the remuneration for thesis evaluation was approved in principle and recommended to the Board of Management for further approval.

20. Recommended to the Board of Management, the enhancement of the existing honorarium to Rs.250/- for the external experts invited for the special lectures.

21. Recommended to the Board of Management, the inclusion of persons from the field of Sericulture also to become eligible to apply for the post of Director of CPPS, provided they satisfied the other conditions stipulated as per ASR Appendix Page 172 for the post of Director of CPPS.

22. Considered the results declared from 01.08.1998 to 31.12.1998 in respect of UG and PG Programmes of TNAU and Diploma in Agriculture Course of TNAU and recommended to the Board of Management for approval.

23. Instituted endowments in honour of the Chief Guest Dr.R.Chidambaram, Chariman,Atomic Energy Commission and Secretary to Government of India, Department of Atomic Energy, Mumbai and the Special Guest Dr.Ismail Serageldin, Chairman, CGIAR, World Bank, Washington, D.C., USA for the award of University Prize.

24. Approved the rules of the following Prizes and Medals.

   1. Dr.M.Rangarajan, Professor (Agrl.Microbiology) Award (College Prize for AC &RI, Coimbatore)

   2. Dr.M.S.Venugopal Endowment Award

3. Prof.S.Thulasi Dass Award for highest marks in B.Sc.(Ag.) in the subject 'Principle and methods of Plant Breeding in Agricultural Botany'.

4. Prof.S. Thulasi Dass Award for highest marks in B.Sc.(Ag.) in the subject 'Botany of Field Crops'.

25. Approved the proposal of the revised guidelines of functioning of the Deans'Committee.

26. Recommended the report of the Committee, appointed for recognising the College of Agricultural Engineering, Kumulur as a Research Institute to the Board of Management for approval.

27. Recommended the report of the Committee on the recognition of PAJANCOA&RI, Karaikal for offering Post-graduate Programme to the Board of Management for approval.

28. Considered the Committee's report on starting a Private College in the name of Adhiparasakthi Agricultural College at Kalavai, Vellore district by the ACMEC Trust, Melmaruvathur subject to certain conditions stipulated and recommended to the Board of Management for consideration subject to the fulfillment of certain requirements.

29. Considered the report of the Committee constituted to assess the infra-structural facilities available at PAJANCOA &RI, Karikal for starting B.Sc.(Hort.) Degree Programme at PAJANCOA & RI, Karaikal.

BOARD OF STUDIES OF THE FACULTY OF AGRICULTURE

01. Dean of the Faculty of Agriculture (Chairman) / other Deans within the Faculty

02. Heads of Departments of the concerned Faculty

03. All the Professors of the Faculty of Agriculture

04. Two elected representatives from among the Associate Professors :

ASSOCIATE PROFESSORS

1. Dr.P.Balasubramanian,Ph.D.,
Dept.of Agronomy,
Agricultural College and Research Institute,
Madurai - 625 104.

ACKNOWLEDGMENT

The whole-hearted support of the Chancellor, the Pro-Chancellor, the Chief Secretary and the Secretaries to the State and Central Governments is gratefully acknowledged. The guidance from the members of Board of Management, Academic Council, Research Council, Regional Research Councils and Extension Education Council was of immense help in identifying new horizons of thoughts and action.

Thanks are due to Indian Council of Agricultural Research, World Bank, and International Rice Research Institute, Philippines for their grants sanctioned to various developmental programmes. The University is also thankful to the State Government, Government of India, Rockefeller Foundation, University of Guelph, Natural Resource Institute, International Institute of Biological Control, Directorate of Agriculture,Oilseeds and Horticulture, Agricultural Marketing, State Planning Commission etc., which have extended financial assistance to the University for undertaking research in specific areas.

It gives immense pleasure to acknowledge the help and co-operation rendered by the University officers. Teachers, Scientists, Students, Technicians and Administrative and Supporting Staff who have helped in the successful and efficient running of the University. The University also considers it as a pride to thank the farming community, agro-industrialists and general public of Tamil Nadu. The sustained support received by this University from the people of the State and functionaries at different levels will go a long way in building this institution as a Centre of Excellence in agricultural research, education, extension and training.

2. Dr.A.Vijayakumar,Ph.D.,
Dept.of Seed Technology,
Tamil Nadu Agricultural University,
Coimbatore - 641 003.

05. Four elected representatives from among the Assistant Professors :

ASSISTANT PROFESSORS

1. Dr.A.John Joel, Ph.D.,
Centre for Plant Breeding and Genetics,
(Education Section -Dean's Office),
Tamil Nadu Agricultural University,
Coimbatore - 641 003.

2. Dr.K.Balakrishnan,Ph.D.,
Horticultural College and Research Institute,
Periyakulam - 625 604.

3. Dr.M.Kalyanasundaram,Ph.D.,
Dept.of Agricultural Entomology,
Agricultural College and Research Institute,
Killikulam, Vallanad - 628 252.

4. Dr.K.Annadurai,Ph.D.,
College of Agricultural Engineering,
Kumulur - 621 712.

06. Two outside experts nominated by the Vice-chancellor :

1. Dr.P.Balakrishna Pillai,Ph.D.,
Dean,
College of Agriculture,
Kerala Agricultural University,
Vellayanai,
Thiruvananthapuram - 695 522.

2. Dr.M.C.Devaiah,Ph.D.,
Dean,
University of Agricultural Sciences,
GKVK Campus,
Bangalore - 560 065.

07. All other Faculty Deans nominated by the Vice-chancellor.

1. Dean (PGS), TNAU, Coimbatore : Member
2. Dean(Hort.,) HC &RI, Coimbatore : Member
3. Dean,Agricultural Engg. CAE, Coimbatore : Member
4. Dean, FC & RI, Mettupalayam : Member

08. All Directors in the University nominated by the Vice-chancellor.

09. Controller of Examinations, Coimbatore.

BOARD OF STUDIES OF THE FACULTY OF HORTICULTURE

01. Dean of the Faculty (Chairman)
02. Other Deans within the Faculty
03. Other Deans in other Faculties
04. Heads of Departments of the concerned Faculty
05. All the Professors of the Faculty
06. Two elected representatives from among the Associate Professors :

ASSOCIATE PROFESSORS

1. Dr.R.Sankaranarayanan,
   Horticultural College and Research Institute,
   Periyakulam - 625 604.

2. Dr.V.Ashok Metha,
   Regional Research Station,
   Paiyur,
   Kaveripattinum - 635 112.

07. Four elected representatives from among the Assistant Professors :

ASSISTANT PROFESSORS

1. Dr.T.N. Bala Mohan,
   Sugarcane Research Station,
   Sirugamani - 639 115.

2. Dr.T.Arumugam,
   Horticultural College and Research institute,
   Tamil Nadu Agricultural University,
   Coimbatore - 641 003.

3. Dr.A.Sadasakthi,
Agricultural College and Research Institute,
Madurai - 625 104.

4. Thiru.S.Nandakumur,
Horticultural College and Research Institute,
Periyakulam - 625 604.

08. Two experts from outside the University nominated by the Vice-chancellor :

i) Dr.P.K.Rajeevan,Ph.D.,
Professor and Head i/c,
Department of Pomology and Floriculture,
Kerala Agricultural University,
College of Horticulture,
Vellanikkara - 680 654.

ii) Dr. K.R.Melantha,Ph.D.,
Professor of Horticulture and Head,
Division of Horticulture,
University of Agricultural Sciences,
GKVK, Bangalore - 560 065.

09. Controller of Examinations, Coimbatore

BOARD OF STUDIES OF THE FACULTY OF AGRICULTURE ENGINEERING

01. Dean of the Faculty and Agricultural Engineering (Chairman)/ Other Deans within the Faculty

02. Heads of the Departments of the concerned Faculty

03. All the Professors of the Faculty of Agricultural Engineering

04. Two elected representatives from among the Associate Professors:

ASSOCIATE PROFESSORS

1. Dr.L.Narayanan,
College of Agricultural Engineering,
Kumulur - 621 712,
Tiruchirappalli District.

2. Dr.A.Tajuddin,
Zonal Research Centre,
College of Agricultural engineering,
Coimbatore - 641 003.

05. Four elected representatives from among the Assistant Professors

ASSISTANT PROFESSORS

1. Mrs.R.Lalitha,
College of Agricultural Engineering,
Kumulur - 621 712,
Tiruchirappalli District.

2. Dr.K.Alagusundaram,
College of Agricultural Engineering,
Kumulur - 621 712,
Tiruchirappali District.

3. Er.V.M.Duraisamy,
Zonal Research Centre,
College of Agricultural Engineering,
Coimbatore - 641 003.

4. Er.I.Muthuchamy,
Water Technology Centre,
Coimbatore - 641 003.

06. Two outside experts nominated by the Vice-chancellor :

1. Dr.T.Guruswamy,
Professor and Head,
Dept.of Farm Power and Agro-Energy,
College of Agricultural Engineering,
UAS,Dharwad, P.B.No.24,
Raichur - 584 101, Karnataka.

2. Dr.C.R.Sukumran,
Professor and Head,
Post Harvest Technology Centre,
(Acharya N.G.Ranga Agricultural University),
Agricultural College Campus,
Bapatla -522 101, Andhra Pradesh.

07. All other Faculty Deans nominated by the Vice-chancellor.

1. Dean(PGS), TNAU ,Coimbatore : Member
2. Dean (Agri.), HC &RI,Coimbatore : Member

3. Dean (Hort.), HC &RI, Coimbatore : Member
4. Dean,FC&RI,Mettupalayam : Member

08. All Directors in the University nominated by the Vice-chancellor

09. Controller of Examinations, Coimbatore.

BOARD OF STUDIES OF THE FACULTY OF FORESTRY

01.	Dean of the Faculty of Forestry	: Chairman
02.	Other Deans in other Faculties	: Members
03.	All Directors in the University	: Members
04.	Controller of Examinations, Coimbatore	: Member
05.	All the Heads of Departments in FC & RI, Mettupalayam	: Members
06.	Outside Experts :	

a. Thiru.R.Annamalai,I.F.S., : Member
Dean, Southern Forest Rangers College,
Coimbatore - 641 002.

b. Dr.B.S.Nada Gowdar,
Senior Scientist (Agro-Forestry),
University of Agricultural Sciences,
Dharwad -580 005.

07. **ASSOCIATE PROFESSORS**

a. Dr.J.Sundarasingh Raja Pandian, : Member
Associate Professor (Agronomy),
FC &RI, Mettupalayam.

b. Er.A.Shanmugam, : Member
Associate Professor (Agrl.Engg.)
FC &RI, Mettupalayam.

08. **ASSISTANT PROFESSORS**

a. Dr.M.Mohammed Yassin, : Member
Assistant Professor (Agro-Forestry),
FC &RI, Mettupalayam.

b. Dr.K.Bhavanisankar, Assistant Professor (Horticulture), FC &RI, Mettupalayam. : Member

c. Dr.K.Kumaran, Assistant Professor (Forestry), FC &RI, Mettupalayam. : Member

d. Dr.N.P.Divya, Assistant Professor (Forestry), FC &RI, Mettupalayam. : Member

BOARD OF STUDIES OF POST-GRADUATE EDUCATION

01. Dean, Post-graduate Studies : Chairman

02. Registrar, Deans and Directors in all Faculties : Members

03. One Professor representing from each of the Faculties of Agriculture, Horticulture, Agricultural Engineering, Forestry and Home Science nominated by the Vice-chancellor

i) Dr.K.K.Mathan, Professor and Head, Department of Soil Science and Agricultural Chemistry, AC &RI, Coimbatore. : Faculty of Agriculture

ii) Dr.S.Sathiyamoorthy, Professor and Head, Department of Pomology, HC & RI, Coimbatore. : Faculty of Horticulture

iii) Dr.R.Kailappan, Professor and Head, Department of Agri.Processing, CAE, Coimbatore. : Faculty of Agricultural Engineering

iv) Dr.C.Surendran, Professor of Forestry, Forest College and Res.Institute, Mettupalayam - 641 301. : Faculty of Forestry

v) Dr.Tmt.A.Susheela Thirumaran, Professor and Head, Dept.of Food Science and Nutrition, AC & RI, Madurai. : Faculty of Home Science

04. **Two outside experts nominated by the Vice-chancellor :**

1. Dr.A.S.Prabhakar,
Director of Instruction,
Post-graduate Studies,
University of Agricultural Sciences,
Krishi Nagar, Dharwad - 580 005,
Karnataka.

2. Dr.J.V.Venkataram,
Director of Instruction,
Post-graduate Studies,
University of Agricultural Sciences,
GKVK Campus,
Bangalore - 560 065.

05. **Controller of Examinations, Coimbatore.**

1998-99 (01.04.1999 to 31.03.1999)

BOARD OF STUDIES MEETINGS

XXXIV	Board of Studies (Agriculture)	on 29.08.1998
XXXV	Board of Studies (Agriculture)	on 14.12.1998
XXVII	Board of Studies (Horticulture)	on 11.08.1998
XXVIII	Board of Studies (Horticulture)	on 19.02.1999
XXXI	Board of Studies (Agrl. Engineering)	on 21.08.1999
XIII	Board of Studies (PG Education)	on 29.08.1998

The Board of Studies (Agriculture) met twice and recommended the following important subjects for consideration of the Academic Council.

Board of Studies (Agrl.) held on 29.08.1998

01. Recommended the revised syllabus for the Diploma in Agriculture courses.

02. Recommended the new commercial Agriculture courses.

03. Recommended to give Computer training to the teachers.

04. Recommended the subjects discussed in the teaching seminar

Board of Studies (Agri.) held on 14.12.1998

01. Recommended the suggestions for the revision of syllabus for 1999-2000.

The Board of Studies (Horticulture) met twice and recommended the following subjects for consideration of the Academic Council,

Board of Studies (Horticulture) held on 11.08.1998

01. Recommended to start B.Sc.(Horti.) programme at PAJANCOA &RI, Karaikal.

02. Recommended the revised schedule of B.Sc.(Hort.) courses for the year 1998-99.

03. Recommended the subjects discussed in the teaching seminar

Board of Studies (Horticulture) held on 19.02.199

01. Recommended to create five separate departments at HC&RI,Periyakulam.

02. Recommended the new commercial Horticultural courses.

The **Board of Studies (Agricultural Engineering)** met once during the year under report.

01. Recommended the recommendations of the teaching workshop held on 27-28, May'98.

02. Recommended the formation of Departments at CAE, Kumulur.

The **Board of Studies of Post-graduate Education** met once and recommended the following subjects:

01. Recommended to change the name of the Department of Seed Technology to Seed Science and Technology

02. Recommended to give remuneration for the teachers for final viva-voce for M.Sc.and qualifying Examination for Ph.D., Students.

03. Recommended to constitute a Committee for updating the P.G.rules and regulations.

04. Recommended to revive a separate Department of Home Science Extension Education and Women Development.

05. Recommended to change the names of the Departments in HC & RI, Coimbatore.

06. Recommended the recommendations of the PG Teaching Seminar held on 27-29 May'1998.

RECOGNITION COMMITTEE MEMBERS

1.	Registrar	: Chairman
2.	Dean(Agri.), AC &RI, Coimbatore	: Member
3.	Dean(PGS),TNAU,Coimbatore	: Member
4.	Dean(Hort.), Coimbatore	: Member
5.	Dean, CAE, Coimbatore	: Member
6.	Dean(Forestry), FC &RI, Mettupalayam	: Member
7.	Director, S&CMS, Coimbatore	: Member
8.	DSW, Coimbatore	: Member
9.	Deputy Registrar	: Member
10.	Controller of Examinations	: Member

: The Recognition Committee Meeting was held once (XXXIV Meeting) during the year i.e on 17.06.1998. The Committee at its XXXIV Meeting discussed about the requisition made by some of the Teachers/ Ph.D. research / part time Ph.D. in other University / Organisations and suggested the following for consideration :

(i) Teachers in general can join Ph.D. programme in TNAU or any other University on full time basis by availing the eligible leave after getting necessary permission from TNAU.

(ii) Ph.D. Scholars can continue their Ph.D.research in other Organisations/ Institutes if MOU is existing between the Organisations / Institutes and TNAU as in TRRI and other Institute like M.S.Swaminathan Research Foundation.

LIST OF STUDENTS ADMITTED AND PASSED OUT DURING 1998-99

The Candidates selected for various under-graduates and post-graduate degree programmes were approved by the Vice-chancellor.

During the year under report, number of students passed out and admitted in the different under-graduate degree programmes are furnished below :

Name of the Degree Programme	Number of Students passed out 01.04.98 to 31.03.99	Number of Students admitted 1998-99
1. B.Sc.(Ag.)	541	361
2. B.Sc.(Hort.)	87	66
3. B.E.(Ag.)	66	27
4. B.Sc.(Home Science)	18	20
5. B.Sc.(Forestry)	33	16
6. B.Tech.(Food Process Engg.)	-	20
Total	745	510

Results have been declared for two batch of students during the year 1998-99.

POST - GRADUATE EDUCATION

Following are the number of Post-graduate students passed out and admitted during the period under report.

NAME OF THE PROGRAMME

Sl.No.	Discipline	No.of students Passed out 1998-99	No.of students admitted 1998-99
Coimbatore Campus			
I.M.Sc.(Ag.)			
01.	Agronomy	11	12
02	Plant Breeding and Genetics	14	16
03	Agricultural Entomology	5	10
04	Soil Science & Agrl.Chemistry	8	12
05.	Agricultural Economics	7	9
06	Agricultural Extension	6	13
07.	Agricultural Microbiology	10	10
08.	Seed Science & Technology	8	9
09.	Crop Physiology	4	5
10	Agrl.Marketing Management	4	7
11.	Plant Protection	-	-
12.	Plant Pathology	11	15
13.	Sugarcane Production	4	-
14.	Farming System Management	-	-
15.	Plant Nematology	3	3
16.	Water Management	-	-
II. M.Sc. Horticulture		29	20
III. M.E.(Ag.) / Engineering		-	-
01	Farm Power and Machinery	3	-
02.	Soil and Water Conservation	5	2

Sl.No.	Discipline	No.of students Passed out 1998-99	No.of students admitted 1998-99
03.	Bio-energy	-	2
04.	Agricultural Processing	9	2
05.	Water Management	-	-
06.	Agro-Energy and Power	-	-
IV.	Master of Business Management	7	8
V.	M.Sc.(Bio-Technology)	11	13
VI.	M.Sc.(Environmental Sciences)	3	-
VII.	Post-graduate Diploma in Sericulture	-	-
VIII.	M.Sc.Sericulture	2	-
	Madurai Campus		
01.	Agronomy	12	8
02.	Plant Breeding and Genetics	3	9
03.	Agricultural Entomology	6	6
04.	Soil Science & Agrl. Chemistry	2	6
05.	Agricultural Microbiology	2	3
06.	Agricultural Economics	2	3
07.	Agricultural Extension	6	8
08.	Plant Pathology	5	6
09.	Crop Physiology	-	-
10.	M.Sc.(Food Science & Nutrition)	7	11
11.	M.Sc.(Hort.)	-	5

Sl.No.	Discipline	No.of students Passed out 1998-99	No.of students admitted 1998-99
Killikulam Campus			
01.	Plant Breeding and Genetics	2	5
02.	Agricultural Entomology	5	4
03.	Soil Science and Agrl.Chemistry	4	4
04.	Agricultural Economics	-	-
05.	Agricultural Extension	2	-
06.	Agronomy	4	5
Periyakulam Campus			
01.	Horticulture	-	5
Mettupalayam Campus			
01.	Forestry	5	10

DOCTORAL PROGRAMME - Ph.D.

Coimbatore Campus (Faculty of Agriculture)			
01.	Agronomy	7	12
02.	Plant Breeding and Genetics	7	10
03.	Agricultural Entomology	4	5
04.	Soil Science & Agrl. Chemistry	3	8
05.	Agricultural Extension	4	3
06.	Agricultural Microbiology	5	4
07.	Crop Physiology	1	2
08.	Seed Science and Technology	3	6
09.	Plant Pathology	2	7
10.	Agricultural Economics	6	6

Sl.No.	Discipline	No.of students Passed out 1998-99	No.of students admitted 1998-99
11.	Econometrics	-	-
12	Environmental Sciences	2	3
13	Plant Nematology	-	3
14.	Bio-technology	2	5
15.	Forestry	-	5
16.	Plant Protection	-	-
Agricultural Engineering			
01.	Farm Power and Machinery	4	-
02.	Soil and Water Conservation	4	2
03	Bio-energy	-	-
04	Agricultural Processing	3	2
Horticulture		7	15
Maduari Campus			
01.	Agronomy	7	6
02.	Plant Breeding and Genetics	2	5
03.	Agricultural Entomology	1	3
04.	Plant Pathology	-	2
05.	Soil Science and Agrl.Chemistry	-	5
06.	Food Science and Nutrition	-	6
07.	Econometrics	-	-
08.	Agricultural Microbiology	-	-

DETAILS OF EXAMINATIONS CONDUCTED FOR THE PERIOD FROM 01.04.1998 TO 30.03.1999

Sl.No.	Degree/Diploma	No.of Semesters	No.of courses for which examinations conducted	
			Regular	Supplementary
01.	B.Sc.(Ag.) (Five Campuses)	8+5*	59+24*	151
02.	B.Sc.(Hort.)	8	62	77
03.	B.E.(Ag.)	9	70	62
04.	B.Sc.(Forestry)	6+1*	55+1*	9
05.	B.Sc.(H.Sc.)	6	46	29
06.	B.Tech.(FPE)	1	6	-
07	Dip.in Agriculture (In Three Campuses)	4	32	-
	Total	42+6*	330+25*	328

* Special Semesters

CONVOCATION

The XX Convocation was conducted on 05.02.1999 at Coimbatore Campus. Her Excellency, the Governor of Tamil Nadu, Justice M.FATHIMA BEEVI awarded the Degrees to the graduates. Totally 1140 candidates applied for getting their Degree Certificates in various disciplines. A total of 570 candidates applied for IN PERSON and 570 IN ABSENTIA.

Dr.R.CHIDAMBARAM, Chairman, Atomic Energy Commission and Secretary to the Government of India, Department of Atomic Energy, Mumbai was the Chief Guest and delivered the Convocation Address.

During the Convocation, the Degree of Doctor of Science (Honoris Causa) was conferred upon Dr.ISMAIL SERAGELDIN, Chairman, Consultative Group on International Agricultural Research, Washington, USA.

PRIZES AND AWARDS :

IN PERSON	- 80 Nos.
IN ABSENTIA	- 37 Nos.

ENDOWMENTS FOR PRIZES / MEDALS INSTITUTED

01. Chief Guest Dr.R.Chidambaram Award for the best M.Sc.(Ag.) student in Soil Science & Agrl. Chemistry who scores highest marks in the subject viz., "Remote sensing " and " Isotopes in Agriculture ".

02. Special Guest Dr.Ismail Serageldin award for the best M.E.(Ag) student in Soil and Water Conversation.

03. Prof.G.Thulasi Dass Award for the B.Sc.(Ag.) student who scores highest marks in the subject viz., Principles and Methods of Plant Breeding in Agricultural Botany.

04. Prof.G.Thulasi Dass Award for the B.Sc.(Ag.) student who scores highest marks in the subject viz., Botany of Field crops.

05. Dr.M.S.Venugopal Award for the best M.Sc.(Ag.) thesis in Rice Entomology.

06. Dr.R.Appaduari Award for the best Ph.D. student in Plant Breeding and Genetics who scores highest marks in the course connected with Population Genetics and Biometrics in Plant Breeding.

07. Dr.(Mrs.) Rani Perumal Award for the best Ph.D. student in Soil Science and Agricultural Chemistry for the research in Soil Fertility.

08. Dr.R.Rathinaswamy Award for the best Ph.D student in Plant Breeding and Genetics who conducts a Commendable Research in Pulses Improvement (Best thesis).

09. Bharathiyar Endowment Award

i) For the scientist who writes best Book in Tamil in respect to any field of Agriculture / Horticulture

ii) For the best student who scores highest marks in Tamil subjects in the UG programme an d have passed all the courses of the Degree Programme in final attempt.

iii) For the best Researcher in the Department of Food Science and Nutrition / Home Science.

iv) A Cash Award to the winners of Higher Secondary School Students in Oratorical Competition (I,II and III Prizes)

10. Chancellor M.Fathima Beevi Award for the Best B.Sc.(Ag.) student who scores highest marks in Agronomy subjects.

11. Dr.M. Yusuf Kamal Award for the best B.Sc.(Ag.) student who scores highest marks in Agricultural Extension subjects.

12. Special Guest Dr.R.S.Paroda Award for the best B.Sc.(Ag.) student who scores highest marks in Soil Science and Agricultural Chemistry subjects.

13. Dr.Kalainger M. Karunanithi Award for the best out going student of B.Sc.(Ag.) degree programme.

Vice-chancellor's Tour to Abroad

Sl.No.	Period	No.of days	Country visited	Funds
1	June 4-25, 1998	22	Canada, U.K. and Horway	The sponsors
	Purpose & Outcome	Participated in the Biotechnology International Conference held in Saskaton, Canada and presented a scientific paper on Indigenous formulations of Neem (*Azadirachta indica*, A. Juss), derivatives for insect control of crops. Also discussed the "Science of Success " focussed on strategies for commercialization of agrobiotech products. The seminar has threshed out the work during the past and brought about the future research thrust on "Agricultural Biotechnology " and its application in crop improvement, production and protection. Visited University of Guelph, Toronto during June 13-26, 1998 and discussed with Dr.Douglas Pletsch, Project Director and Dr.Jana Janakiram, Project Co-ordinator on the progress so far made in the collaborative project on "Seed Production Technology". Also have discussed about 'Cereal crop Nitrogen Fixation " Biotechnological research in rice crop N fixation with a collaborative programme with the British Council Academic under Notingham. Discussed about the collaborative project under European Economic Cooperation (EEC) at Univ. of London, UK on the Ammonia production by 'immobilised cyanobacteria' for rice. Discussed on Organic farming and ecological agriculture for future collaboration with Dr.Roger K.Abrahamsen, Vice-chancellor and other scientists at Norway Agrl.University.		

Sl.No.	Period	No.of days	Country visited	Funds
2	Sept.19- Oct.10, 1998	21	China,Thailand, Taiwan and Malaysia	The sponsors
	Purpose & Outcome	Participated in the Technical Steering Committee Meeting on INM (net) and IPM (net) and steering committee of IRRC at Hangzhou, China. Presented the result of the on station and farmers holdings experiments in old and new cauvery delta area and discussed about the future plan of work in the scheme. Based on the deliberations, new scheme on IPM (net) to our University has been approved and funds provided. The scheme work has already been started. Participated in the International Conference on peri-urban vegetable production organised by AVRDC, Taiwan and presented a paper on "**Ecofriendly pest Management for vegetables crops**" Acquired new collaborative schemes on vegetables. As a outcome of discussion, new projects on introduction of new species of crops hiether to not used as food crops, as food resources and exploitation of bye products of some species for edible purposes. Participated in the Ganoderma disease workshop and presented a paper on "***Ganoderma* wilt of coconut in India- An overview** " at MARDI, Malaysia. Got approval for new research collaboration on four new research schemes on plantation crops. Accordingly the scheme proposals have been sent from Coconut Research Station. Veppankulam and Horticultural College and Research Institute, Coimbatore to UK for provision of funds.		

SCIENTISTS DEPUTED TO PARTICIPATE IN SEMINAR/CONFERENCE/WORKSHOP/TRAINING HELD ABROAD

Sl.No.	Name of the Scientist	Place of visit	Period	Purpose	Sponsoring Agency
1.	Dr.O.S. Kandasamy, Professor (Agron), Dept. of Agronomy, TNAU, CBE.	U.K.	30.03.98 to 29.06.98	To undergo training Programme on Ecological Agriculture at IACR, Rothemsted.	AHRDP
2.	Th.S.Kalaiarasan, Asst. Prof. (Ento.), ARS, Vrinjipuram.	U.S.A.	01.05.98 to 31.07.98	To undergo training Programme on Taxicokinetics at Iowa State University.	AHRDP
3.	Dr.B.Thayumanavan, Prof.and Head, Dept.of Bio-Chemistry, TNAU, CBE.	Malaysia	01.04.98 to 30.06.98	To undergo training programme on Isolation of Bio Compounds at University of Malaya.	AHRDP
4.	Dr.E.I. Jonatham, Assoc.Prof. (Nemat.), SRS, Sirugamani.	U.S.A	03.04.98 to 02.10.98	To undergo training programme on Biological control of Nematodes at North Carolina State University Raleigh.	AHRDP
5.	Dr.C.Ramasamy, Director, CARDS,TNAU. Coimbatore.	Philippines	20.04.98 to 22.04.98	To participate in the Final International Work-on Priorities of Rice Research Problem Areas at IRRI.	IRRI

Sl.No.	Name of the Scientist	Place of visit	Period	Purpose	Sponsoring Agency
6.	Dr.Karnam Lokanathan, Assoc.Prof.(Econ.), Dept.of Ag.Economics, AC &RI, Madurai.	Philippines	20.04.98 to 22.04.98	To participate in the Final International work on Priorities of Rice Research Problem Areas at IRRI.	IRRI
7.	Dr.C.R.Ranganathan, Professor (Maths), Directorate of Ext.Edn., TNAU,Coimbatore.	Bangkok	04.05.98 to 04.08.98	To undergo training programme on Artificial Intelligence at Asian Institute of Technology, Bangkok.	AHRDP
8.	Dr.M.Muthuraman, Asso.Prof.(Ento), Dept.of Entomology, TNAU,Coimbatore.	U.K.	25.05.98 to 24.11.98	To undergo training programme on Genetic Improvement of Honey Bees at University of Sheffield,U.K.	AHRDP
9.	Th.R.Thamizhvendan, Asst.Prof.(Micro), TRRI, Aduthurai	Philippines	25.05.98 to 12.06.98	To participate in the IRRI Training course on Soil & Water Biochemistry and Ecotoxicology, at IRRI.	IRRI
10.	Dr.C.Udayasoorian, Assoc.Prof.(SS & AC), Dept.of Env.Sciences, TNAU,Coimbatore.	Philippines	25.05.98 to 12.06.98	To participate in the IRRI Training course on Soil & Water Biochemistry and Ecotoxicology, at IRRI.	IRRI

Sl.No.	Name of the Scientist	Place of visit	Period	Purpose	Sponsoring Agency
11.	Dr.N.Dhandapani, Assoc.Prof.(Ento.) Dept.of Rice, TNAU,Coimbatore.	U.S.A.	01.06.98 to 31.08.98	To undergo training programme on Development of improved strains of *Bacillus thuringiensis* at University of Georgia.	AHRDP
12.	Dr.P.Ramasamy, Asst. Prof.(PB&G), Dept.of Millets, TNAU,Coimbatore.	U.S.A.	07.06.98 to 06.06.99	To avail the Rockefeller fundation Post Doctoral Fellowship for his advanced study at the Texas A&M University.	Rockefeller Foundation
13.	Dr.P.Shanmugasundaram, Assoc.Professor (PB&G), CPMB,TNAU,Coimbatore.	Canada	09.06.98 to 12.06.98	To participate in the Agrl.Biotechnology International Conference at Saskaton.	Rockefeller scheme.
14.	Dr.S.Kannaiyan, Dean (Agri.,) TNAU,Coimbatore.	Canada, U.K. & Norway	09.06.98 to 23.06.98	To participate in the Agrl.Biotechnology International Conference at Saskootan and visit University of London, University of Nottingham for discussion of EEC project and also visit Norway Agricultural University for discussion on Organic Farming and ecological Agriculture.	EEC Project
15.	Dr.R.S.Azhakiamanavalan, Dean, HC & RI, Periyakulam.	U.S.A.	15.06.98 to 14.09.98	To undergo training programme on handling and packaging of cutflowers at University of California,Davis.	AHRDP

Sl.No.	Name of the Scientist	Place of visit	Period	Purpose	Sponsoring Agency
16.	Dr.N.Muthukrishnan, Asst.Prof.(Ento.) Dept.of Agrl.Entomology AC &RI, Madurai.	Canada	15.06.98 to 14.06.99	To avail the Rockefeller Foundations Post Doctoral Fellowship in Entomology for his advanced study at the University of Ottawa.	Rockefeller foundation
17.	Dr.J.R.Kannan Babu, Asst.Prof.(PB&G), NPRC, Vamban.	U.S.A.	15.07.98 to 14.07.99	To avail the Rockefeller Foundations Post Doctoral Fellowship for his advanced study at the Virgina Polytechnic and State University, Blackburg.	Rockefeller foundation
18.	Dr.D.Sudhakar, Asst.Professor (PB&G), CPMB,TNAU, Coimbatore.	Australia	13.07.98 to 16.07.98	To participate in the 4th Asia-Pacific Conference on Agrl. Bio.Technology at Darwin, Australia to present his paper.	Rockefeller foundation
19.	Dr.M.Paramathma, Assoc.Professor (For.), FC & RI, Mettupalayam.	Australia	13.07.98 to 12.01.99	To undergo the training programme on Tree Improvement at Australian National University, Canberra, Australia.	AHRDP
20.	Dr.A.Manickam, Professor (Bio-Chem.), CPMB,TNAU, Coimbatore.	Taiwan	17.07.98 to 16.07.99	To undergo the Post Doctoral training on Genetic Engineering of bruchid tolerance and yellow mosaic virus resistance in mungbean at AVRDC,Taiwan.	AVRDC Taiwan

Sl.No.	Name of the Scientist	Place of visit	Period	Purpose	Sponsoring Agency
21.	Dr.A.John Joel, Asst. Prof. (PG&G), Office of the Dean (Ag.), TNAU,Coimbatore.	China	23.07.98 to 22.07.99	To avail the Rockefeller Foundations Post Doctoral Fellowship in Plant Breeding Genetics for his advanced study at the Huazhong Agrl.University,China.	Rockefeller foundation
22.	Dr.A.Tajuddin, Prof. (Engg.), Zonal Res.Centre, TNAU,Coimbatore.	Australia	06.08.98 to 05.02.99	To undergo the training programme on Design of tillage machinery at Univ.of Queensland, Australia under AHRDP.	AHRDP
23.	Dr.S.Natarajan, Prof. & Head, HRS,Ooty.	USA	07.08.98 to 06.11.98	To undergo the training programme on Resistance Breeding in Solanaceous Vegetable crops at Univ. of California, USA.	AHRDP
24.	Dr.A.Rajogapal, Director, WTC,TNAU, Coimbatore.	Sweden	10.08.98 to 13.08.98	To participate in the Stockholm Water Symposium at Stockholm, Sweden to present his paper.	Organisers
25.	Dr.P.Muthuvel, Professor (SS & AC), Dept.of SS & AC, TNAU,Coimbatore	France	20.08.98 to 26.08.98	To participate in the 16th World Congress of Soil Science at Montpellier, France to present his paper.	Indian Society of Soil Science New Delhi

Sl.No.	Name of the Scientist	Place of visit	Period	Purpose	Sponsoring Agency
26.	Dr.R.Krishnaswamy, Prof. (SS & AC), Dept.of SS & AC, TNAU,Coimbatore.	France	20.08.98 to 26.08.98	To participate in the 16th World Congress of Soil Science at Montpellier, France to present his paper.	Indian Society of Soil Science New Delhi.
27.	Dr.P.Singaram, Prof.(SS & AC), Dept.of Olericulture, TNAU,Coimbatore.	France	20.08.98 to 26.08.98	To participate in the 16th World Congress of Soil Science at Montpellier, France to present his paper.	Indian Society of Soil Science New Delhi.
28.	Dr.S.Krishnaveni, Assoc.Prof. (Bio-Chem), Dept.of Oliseeds, TNAU,Coimbatore.	USA	24.08.98 to 23.08.99	To work as a Research Associate on a research project on sorghum transformation for disease resistance at Kansas State University,USA.	Kansas State Univ.
29.	Dr.S.Sadasivam, Director, CPMB,TNAU, Coimbatore.	USA	27.08.98 to 05.09.98	To participate in the conference on Impact of Molecular Biology on Crop Production at Minneapolis,USA and to visit the Univ.of California, Plant DNA Tech. Corporation and Standford Univ.USA.	Rockefellor Founded Scheme.
30.	Dr.S.Uthamasamy, Prof. & Head, Dept.of Ag.Ento., AC &RI, Madurai.	Greece	06.09.98 to 15.09.98	To participate in the World Cotton Research Conference at Athens, Greece to present his paper.	NRI

Sl.No.	Name of the Scientist	Place of visit	Period	Purpose	Sponsoring Agency
31.	Dr.A.Regupathy, Dean, Ac & RI, Madurai.	France & USA	06.09.98 to 22.09.98	To participate in the World Cotton Research Conference at Athens,Greece and personal visit to Portland,USA.	NRI & Own funds
32.	Dr.M.Sankaranarayanan, Prof.(Comp.Science) Dean(Agri.) Office, TNAU,Coimbatore.	Thailand	14.09.98 to 13.12.98	To undergo training programme on Crop Simulation Applications in Agricultural Res. at Asian Institute of Tech., Bankok, Thailand.	AHRDP
33.	Dr.C.Kailasam, Prof.(Maths), Dean (Agri.) Office, TNAU,Coimbatore	Thailand	14.09.98 to 13.12.98	To undergo training programme on Crop Simulation Applications in Agricultural Res. at Asian Institute of Tech., Bankok, Thailand.	AHRDP
34.	Dr.P.Balasubramanian, Prof.(Plant Path.), CPMB,TNAU, Coimbatore.	UK	21.09.98 to 20.12.98	To undertake research on Gene Pyradmiding in elite indica cultivars and enhancing transgene expression under the Rockfeller Foundations Biotechnology career fellowship at John Innes Centre, U.K.	Rockefellor Foundtion

Sl.No.	Name of the Scientist	Place of visit	Period	Purpose	Sponsoring Agency
35.	Dr.S.Thamburaj, Dean (Hort.), TNAU, Coimbatore.	Thailand	29.09.98 to 01.10.98	To participate in the International Conference on Peri - Urban Vegetable Production in the Asia Pacific Region for 21st Century, at Bangkok, Thailand to present his paper.	AVRDC Taiwan
36.	Dr.A.Karthikeyan, Asst.Prof.(Pl.Path.) Coconut Res.Station, Veppankulam.	Malaysia	05.10.98 to 08.10.98	To participate in the International Workshop on Ganoderma diseases at MARDI Training Centre, Malaysia to present his paper.	CABI, U.K.
37.	Dr.A.Palchamy, Prof. & Head, Agrl. Res.Station, Paramakudi.	Israel	26.10.98 to 25.12.98	To undergo the training programme on Irrigation and Soil Management at Volcani Centre, ARO, Betdagan, Israel.	AHRDP
38.	Dr.M.Arumugam Pillai, Asst.Professor (PBG), Rice Res.Station, Ambasamudram	Japan	27.10.98 to 30.09.99	Visiting Research programme 1998 for undertaking Research at the Okinawa subtropical Station of Japan International Res.Centre for Agrl.Sciences, Japan.	JIRCAS

Sl.No.	Name of the Scientist	Place of visit	Period	Purpose	Sponsoring Agency
39.	Dr.S.Sathiamoorthy, Prof. (Hort.), HC & RI., Periyakulam	Cameroon	08.11.98 to 14.11.98	To participate in the International Symposium on Bananas and Food Security at Douala, Cameroon to present his paper.	Collaborative research scheme funded by Univ.of Reading,UK.
40.	Dr.K.Soorianathasundaram, Asst. Prof. (Hort.), Dept.of Pomology, TNAU,Coimbatore.	Cameroon	08.11.98 to 14.11.98	To participate in the International Symposium on Bananas and Food Security at Douala, Cameroon to present his paper.	Collaborative research scheme funded by Univ.of Reading,UK.
41.	Dr.T.Ganapathy, Assoc.Prof.(Pl.Path), Dept.of Millets, TNAU,Coimbatore.	Philippines	09.11.98 to 11.11.98	To participate in the Rice Tungro Management Workshop at IRRI, Philippines to present a paper.	IRRI
42.	Thiru.N.Subramanian, Asst. Prof. (Pl.Path.), Rice Res.Station, Tirur.	Philippines	09.11.98 to 11.11.98	To participate in the Rice Tungro Management Workshop at IRRI, Philippines to present a paper.	IRRI

Sl.No.	Name of the Scientist	Place of visit	Period	Purpose	Sponsoring Agency
43.	Dr.R.Chandra Babu, Assoc. Prof. (C.Phy), CPMB,TNAU, Coimbatore.	Philippines	01.12.98 to 03.12.98	To participate in the Workshop on Genetic improvement of Rice for Water Limited Environments at IRRI, Philippines.	IRRI
44.	Dr.R.Chandra Babu, Assoc.Prof.(C.Phy) CPMB, TNAU, Coimbatore.	USA	18.01.99 to 20.04.99	To undertake Collaborative research on the use of Molecular markers to improve drought resistance in rice at Texas Tech. University, USA .	Rockefeller foundation.
45.	Dr.V.Geethalakshmi, Asst. Prof. (Agron), Dept.of Ag.Meteorology, TNAU, Coimbatore.	Australia	01.02.99 to 19.02.99	To participate in the IRI training Course on Applications of Climatic Forecasts to Agriculture at Toowoomba, Australia.	IRI, USA
46.	Dr.R.Selvaraju, Asst.Prof. (Agron), Dept.of Ag.Meteorology, TNAU,Coimbatore.	Australia	01.02.99 to 19.02.99	To participate in the IRI training Course on Applications of Climatic Forecasts to Agriculture at Toowoomba, Australia.	IRI, USA

Sl.No.	Name of the Scientist	Place of visit	Period	Purpose	Sponsoring Agency
47.	Dr.S.Parvathy, Assoc.Prof.(Home Sci.) AC & RI, Madurai	Malaysia	01.02.99 to 31.07.99	To undergo the training programme on Post harvest and processing Technology of Fruits Vegetables at MARDI, Kuala Lumpur.	AHRDP
48.	Dr.V.Udayasuriyan, Assoc.Prof (Ag.Micro) CPMB,TNAU,Coimbatore.	Singapore	22.02.99 to 21.08.99	To carryout Collaborative research at the Institute of Molecular Agro Biology, Singapore.	Rockefeller foundation.
49.	Dr.M.Subramanian, Director, TRRI,Aduthurai.	Vietnam	23.02.99 to 28.02.99	To visit Cuu Long Delta Rice Res.Instiute, Oman,Vietnam under the Irrigated Rice Res. Consortium (IRRC) sponsored Scientists exchange visit programme.	RTDP
50.	Dr.R.Nagarajan, Prof.& Head, S&WMRI,Thanjavur.	Vietnam	23.02.99 to 28.02.99	To visit Cuu Long Delta Rice Res.Institute, Oman,Vietnam under the Irrigated Rice Res. Consortium (IRRC) sponsored Scientists exchange visit programme.	RTDP

Sl.No.	Name of the Scientist	Place of visit	Period	Purpose	Sponsoring Agency
51.	Dr.M.Sivanantham, Professor (Ag.Econ.), TRRI,Aduthurai.	Vietnam	23.02.99 to 28.02.99	To visit Cuu Long Delta Rice Res.Institute, Oman,Vietnam under the Irrigated Rice Res. Consortium (IRRC) sponsored Scientists exchange visit programme.	RTDP
52.	Dr.P.Stalin, Asst.Prof.(SS&AC), TRRI,Aduthurai.	Vietnam	23.02.99 to 28.02.99	To visit Cuu Long Delta Rice Res.Institute, Oman,Vietnam under the Irrigated Rice Res. Consortium (IRRC) sponsored Scientists exchange visit programme.	RTDP
53.	Dr.J.Ramalingam, Asst.Professor (PBG), AC&RI, Killikulam.	China	15.03.98 to 14.03.2000	To avail the Chinese Govt.Scholarship for his Advanced Research at South China Agrl. University,China.	Govt.of China.

3. EDUCATION

AGRICULTURAL COLLEGE AND RESEARCH INSTITUTE, COIMBATORE.

Dr.S.Kannaiyan continued as Dean (Agriculture) during the period under report.

The students strength during the period under report are as under :

S.No.	Class	Boys	Girls	Total
1.	I B.Sc (Agriculture)	56	46	102
2.	II B.Sc.(Agriculture)	55	43	98
3.	III B.Sc.(Agriculture)	41	47	88
4.	IV B.Sc.(Agriculture)	43	62	105
	Total	***195***	***203***	***393***

Educational Tours organised

The students of II B.Sc.(Ag.) numbering 43 girls and 55 boys were taken to the following places within Tamil Nadu as study tour from 27.01.99 to 07.02.99

1. Regional Research Station, Paiyur
2. Horticultural Research Station, Yercaud
3. Oil seed Research Station, Tindivanam
4. KVK,Pondicherry
5. Sugarcane Research Station, Cuddalore
6. Tamil Nadu Rice Research Institute, Aduthurai
7. PAJANCOA & RI, Karaikal
8. Soil and Water Management Research Institute, Thanjavur
9. Agricultural College and Research Institute,Trichy
10. Agirucltural College and Research Institute,Madurai
11. Regional Research Station, Aruppukkottai
12. Agricultural Research Station, Paramakudi
13. Agricultural Research Station, Ramnad
14. Agricultural Research Station,Koilpatti
15. Agricultural College and Research Institute,Kjllikulam
16. Model Orchard, Kanyakumari
17. Rice Research Station, Ambasamudram
18. Cotton Research Station, Srivilliputhur
19. Horticultural College and Research Institute,Periyakulam
20. Horticultural Research Station, Kodaikkanal

The students of IV B.Sc.(Ag.) were taken to the following institutes of national importance from 13.02.99 to 02.03.99.

1. Indian Agricultural Research Institute, New Delhi.
2. Rajasthan Agricultural University,Jaipur.
3. Moghul Garden, Agra, New Delhi
4. G.B.Pant Agriculturaal University,Pantnagar
5. Indian Veterinary Research Institute,Izatnagar
6. National Remote Sensing Institute,Dehradun
7. CEFRI,Missouri
8. Indian Adminstrative Service,New Delhi
9. Pinjore Rose Garden, Chandigrah
10. Punjab Agricultural University,Ludhiana
11. University of Horticulture and Forestry,Solan
12. Central Potato Research Institute,Simla
13. ICRSAT,CRIDA,NPPTI,DRI,NAARM,MANAGE,EEI at Hyderabad.

Village Stay Programme :

The three months village stay programme for II B.Sc.(Agriculture) students numbering 55 girls and 43 boys was started on 22.10.98. The Students were familiarised to various departments for one week and given orientation about the village stay programme by the teachers which was inaugurated by the Vice-chancellor on 27.10.98. The students were placed in the following 14 villeges in groups of seven / eight on 01.11.98.

Coimbatore District :

1. Sellampalayam, 2. Vettaikaran Pudur,3.Govindapuram, 4. Karattur, 5. Periyavalavad.

Erode District :

1. Kallipatti, 2. Kugalur, 3.Athani, 4. Cheyyur, 5. Thimmkayan Pudur, 6. Odanthurai, 7. Kaspapettai, 8. Tukkanaickenpalayam, 9. Nasianur.

The mid term appraisal of village stay programme was held on 08.01.99 in the main campus. The programme was concluded on 20.01.99 and the students were brought to the College. The workshop and exhibition was held between 23.03.99 and 27.03.99.Dr.D.S.Padda,Vice President Emeritus,University of Virgin Islands,USA and Dr.N.L.Maurya,ADG (Accreditation) inaugurated the Exhibition and had interaction with students.

Scholarship :

Besides the regular scholaship for Backward, Most backward,Scheduled caste and tribes, scholarship instituted by Mrs.Subbalaskhmi Krishnan as T.R.Krishnan award and by Ms.Kamalam as Vedavalli Scholarship, Shanthi Trust as

Shanthi trust award are being operated.The scholarship for the students from families without graduates is being operated. Four students in II B.Sc.(Agriculture) and three students in I B.Sc.(Agriculture) are benefited by the above scholarship.

The details of the number of students benefited by the scholarship offered by state government and university are as follows :

S.No.	Particulars	I B.Sc.(Ag.)	II B.Sc.(Ag.)	III B.Sc.(Ag.)	IV B.Sc.(Ag.)
1.	BC Scholarship & MBC Scholarship	38	19	22	11
2.	SC Scholarship	8	6	2	6
3.	SC Loan Scholarship	4	3	2	2
4.	T.R.Krishnan Scholarship	1	-	-	-
5.	Santhi Trust Scholarship	1	-	-	-
6.	Vedavalli Scholarship	-	-	1	-
7.	TNAU Merit Scholarship	8	8	8	8
8.	SC Merit Scholarship	1	-	-	-
9.	ADHOC Merit	1	-	-	-

UNIVERSITY HOSPITAL

The University Hospital has rendered the following health care to students and staff members of TNAU.

1. Symptomatic treatment for common disease
2. Preventive care of students,staff members and family members of staff from various diseases.
3. Investigation and Diagnosis and treatment for Diabetics and Hypertension
4. Immunisation against Tetanus and Hepatitis B
5. Symptomatic & Therepeutic treatment for common diseases.
6. Emergencies in accidents, Beesting and Snake bite
7. Communicable disease like numps, measles and typhoid
8. Food poision in students hostel
9. Annexure clinic in ladies hostel functions on all working days.

Special Activities conducted :

Special lectures on dealing with Adolescence by Dr.Dhavamani Palanisamy, Common Diseases in Uterus and Ovaries by Dr.Atima Pathak and Indication of Mammography by Dr.Chellakumari James were conducted for the Ladies club members.

The Hospital Extension building built at a cost of Rs.8 lakhs was inaugurated on 12th November 1998 by Mrs.Shanthi Santhananam, Member of Board of Management.

AGRICULTURAL COLLEGE AND RESEARCH INSTITUTE, MADURAI - 625 104.

Dr.A.Regupathy, continued as Dean of the college during the period under report.

Education

(i) Admission

Students Strength

Degree	I Year	II Year	III Year	IV Year	Total
B.Sc.(Ag.)	99	109	83	85	376
B.Sc.(Home Sceince)	20	15	19	-	54
M.Sc.(Ag.) / FSN	65	48	-	-	113
Ph.D.(Ag.) / FSN	27	12	10	-	49

(ii) All India Study Tour

The final year B.Sc.(Ag.) students of 1998-99 batch of Agricultural College and Research Institute, Madurai were on the All India Study tour from 25.12.98 to 11.01.99. Under this study tour, 85 students had the opportunity of visiting various national and international institutes, SAU's and other places of importance.

The students visited ICRISAT, the international institute at Andhra Pradesh. They also visited various divisions of IARI and other national centres like WTC, NBPGRI, etc., including the IARI Library at New Delhi. CRIDA, NPPTI, NAARM, MANAGE and NIRD are some of the national institutes they visited at Hyderabad.

To understand the latest technology and development, students visited the Remote Sensing Institute at Dehradun. They also visited the Forest Research Institute at Dehradun. To have an idea about the functioning of SAUs, students visited ANGRAU at Hyderabad.

The above tour helped the students to learn farming systems in various agro-climatic zones and culture of people.

(iii) Village stay programme

As per the regulations of the revised syllabus, the II B.Sc.(Ag.) students of Agricultural College and Research Institute, Madurai underwent the three months Village Stay Programme from 20.10.99 to 19.01.99. One hundred and eight students constituting 54 boys and 54 girls were placed in 168 villages situated in the 14 divisions of Assistant Directors of Agriculture in the districts of Madurai, Dindigul, Virudhunagar, Sivagangai, Theni and Ramnad.

With the help of identified farmers and field staff, these 108 students learnt the Village social situations, farmers' cultivation, farmers field level constraints, the indigenous technology in usage, the developmental work carried out by various departments including the voluntary and private agencies, the generation of technologies in the research stations, the technology desemination methods, the mass media usuage and other details.

They also got experienced in doing farming by sharing field work. They assisted the Development workers in conducting village meetings, exhibitions, campaigns, demonstration etc.

(iv) **Scholarship**

During the academic year 1998-99, scholarship / awards to the tune of Rs.20,00,000 /- was disbursed to 456 students under the following 21 categories.

Sl.No.	Name of the Scholarship / Award / Source	No.of students availed			
		B.Sc. (Ag)	M.Sc. (Ag.)	Ph.D. (Ag)	Total
1.	Backward classes Welfare Scholarship	136	6	-	142
2.	Adidravidar Welfare Scholarship	77	5	3	85
3.	Adidravidar Welfare Loan Scholarship	62	10	3	75
4.	Adhoc merit grant	23	-	-	23
5.	National Merit Scholarship	9	-	-	9
6.	ICAR fellowship	6	-	-	6
7.	Prize money	3	-	-	3
8.	AMM Arunachalam shastiabtherpoorthy scholarship	1	-	-	1
9.	DNT Scholarship	15	-	-	15

10.	Chief Ministers Award	10	-	-	10
11.	CSIR Res. Associateship	-	-	1	1
12.	Aspee Agrl. Res. & Dev.fellowship.	-	5	-	5
13.	ICAR Scholarship	1	-	-	1
14.	Agrl Merit Scholarship	25	9	4	38
15.	State Scholarship for the children of deceased Govt Servant	3	-	-	3
16.	Mrs. Subbulakshmi Krishnan scholarship	1	-	-	1
17.	Mrs.Shanthi Turst Endowment Fellowship.	1	-	-	1
18.	S.J.Jindal Trust Scholarship	-	2	-	2
19.	Peraringnar Anna Memorial Award	1	-	-	1
20.	Stipend to AAO's	31	-	-	31
21.	Free Education to students come from non-graduate families	3	-	-	3

AGRICULTURAL COLLEGE AND RESEARCH INSTITUTE, KILLIKULAM

Dr.A.Mohamed Ali continued as Dean of the college during the period under report.

Education :

a) Degree programmes offered

(i) B.Sc.(Agri) - 4 years
(ii) M.Sc.(Agri) - 2 years

- Agronomy
- Plant Breeding and Genetics
- Agrl.Entomology
- Soil Science and Agrl.Chemistry
- Agrl.Extension

b) Admission :

Students Strength

Degree	Year	Boys	Girls	Total
1) B.Sc.(Ag.)	1998-99 Batch	30	66	96
B.Sc.(Ag.)	1997-98 Batch	40	45	85
B.Sc.(Ag.)	1996-97 Batch	37	67	104
B.Sc.(Ag.)	1995-96 Batch	40	39	79
2) M.Sc.(Ag.)	1997-98 Batch	09	08	17
M.Sc.(Ag.)	1998-99 Batch	12	06	18
Total		**168**	**231**	**399**

c) Education Tours Organised :

S.No.	Years	Date	Places of visit	No.of students	Remarks
I. All India Study Tour					
	IV B.Sc.(Ag.)	25.10.98 to 10.11.98	Hyderabad,Delhi, Jaipur, Dehradun, Shimla, Agra and Chandigarh	79	
II. Hort Tour					
1.	II B.Sc.(Ag.)	30.01.99 to 10.02.99	Research Stations of 1) Ambasamudram 2) Petchiparai 3) Srivilliputhur 4) Periyakulam 5) TNAU,Coimbatore 6) Vedasanthur 7) Bhavanisagar 8) Ooty 9) Paiyur 10) Vridhachalam 11) Aduthurai 12) Sirugamani 13) Trichy 14) Vamban 15) Maduari 16) Aruppukottai 17) Paramakudi 18) Ramanathapuram 19) Kovilpatti.	84	

1.	I B.Sc.(Ag.)	07.09.98	Private Nursery Sayerpuram.	86
2.	III B.Sc.(Ag.)	16.12.98 & 18.12.98	Soil Survey & land use organization, Palayamkottai.	105
3.	III B.Sc.(Ag.)	19.12.98	Dharani Sugars, Vasudevanallur.	105
4.	IV B.Sc.(Ag.)	05.09,98	Social Forestry Nursery, Alangulam Ambasamudram.	104
5.	III B.Sc.(Ag.)	10.06.98	Social Forestry Nursery, Ponnakudi.	80
6.	III B.Sc.(Ag.)	02.07.98	Agrl.Res.Station, Kovilpatti.	83
7.	I M.Sc.(Ag.)	18.01.99 to 19.01.99	Pesticide firm, Batlagundu.	6
8.	I M.Sc.(Ag.)	12.10.98 to 17.10.98	TNAU, Coimbatore.	2
9.	I M.Sc.(Ag.)	14.09.98 to 16.09.98	Anna University, Chennai.	2

Apart from these tours, students were regularly involved in outdoor practical classes on Agricultural Extension, Agricultural Economics and Horticulture courses.

d) Village Stay Programme

Village Stay Programme under RAWE, was conducted for the 1997-98 batch of B.Sc.(Ag.) students during their III Semester from 22.10.98 to 19.01.99. Totally 85 students, comprising of 41 boys and 44 girls attended the programme. The students were placed in 14 agricultural divisions viz., Thiruchendur, Sathankulam, Ottapidaram and Vilathikulam of Thoothukudi district; Ambasamudram, Tenkasi, Senkottai, Nanguneri, Sankarankoil and Sivagiri of Triunelveli district ; Nagerkoil, Boothapondi and Thukalay of Kanyakumari district and Srivilliputtur of Virudhunagar district. By experiential learning methodology, the students studied various aspects viz., village & farm resources, village social life, rural issues and farm problem, role of research and development departments in rural development, and methodology to conduct extension activities. After the end of the programme , students conducted an exhibition highlighting the lessons they learnt during the 90 days stay in the villages. The Exhibition was attended by Dr.A.Abdul Kareem, Vice-chancellor, Tamil Nadu Agricultural University and Thiru.V.Dhanave, Collector, Tirunelveli District.

e) **Scholarship**

During the academic year 1998-99, scholarship / awards to the tune c Rs.15,39,152 /- was disbursed to 340 students under the following nine categories.

Sl.No.	Name of the Scholarship / Award / Source	No.of students availed	Amount Rs.
1.	BC/MBC/DNC Scholarship	146	3,05,028.00
2.	SC Post Matric Scholarship	99	5,17,809.00
3.	SC Loan Scholarship	63	5,28,000.00
4.	ICAR Junior Fellowship	6	1,17,000.00
5.	National Merit Scholarship	6	34,200.00
6.	State Government Scholarship for disabled students.	2	4,800.00
7.	Chief Minister's Award	16	25,500.00
8.	Ex-Servicemen Scholarship	1	5,815.00
9.	Teacher's Welfare Fund Scheme	1	1,000.00
	TOTAL	**340**	**15,39,152.00**

ANBIL DHARMALINGAM AGRICULTURAL COLLEGE AND RESEARCH INSTITUTE, TIRUCHIRAPPALLI. 620 009.

Dr.K.Rajukkanu continued as a Dean of the college during the period under report .

Students Admission

The students strength during the period under report are as under :

I B.Sc.(Agriculture)	.....	36
II B.Sc.(Agriculture)	.....	38
III B.Sc.(Agriculture)	.....	23
IV B.Sc.(Agriculture)	.....	26
Total		123

(i) All India Study Tour

The All India Study Tour was conducted from 27th October'98 to 12th November'98. The final year students visited Hyderabad and studied the functions and programmes of NARRM, NIRD,MANAGE, DRO, ICRISAT, CRIDA, ANGRAU, NPPTI etc., They also studied the farming system and socio-economic conditions of farmers of Andhra Pradesh. Then they visited IARI at Delhi, RAU in Jaipur, IIRS & FRI at Dehradun, CPRI & HRI at Kufri, Simla. The students undertook the tour for 15 days.

(ii) Village Stay Programme

The students of II B.Sc.(Ag) have undergone the three months Village Stay Programme from November'98 to February'99 in the districts of Tanjore, Karur, Perambalur, South Arcot, North Arcot and Thiruvarur. The students numbering 69 have been divided into 10 groups and placed in 10 locations in these districts. After the completion of the three months programme, the students presented their experiences in a seminar and arranged an exhibition during farmer's Day in which Vice-chancellor, TNAU participated and interacted with the students.

During 1998-99, the II B.Sc.(Ag) students visited Tamil Nadu Agri. University, Coimbatore, AC &RI, Madurai and Horticultural College and Research Institute, Periyakulam, Regional Research Stations of Bhavanisagar, Virudhachalam, Aruppukkottai, Tamil Nadu Rice Research Institute, Aduthurai, Agricultural Research Stations of Kovilpatti and Pechiparai and Central Tobacco Research Station Vedasanthur. Various agroclimatic features of that particular Zone, new varieties and the latest findings of the stations and new equipments and cropping pattern of that particular districts were sown and explained to them apart from field visit, demonstration and seeing exhibits.

COLLEGE OF AGRICULTURAL ENGINEERING, KUMULUR

Dr.M.Balasubramanian continued as Dean of the college during the period under report .

The College offers B.E.(Ag.) Programme under the semester system. The number of students as on roll in I, II,III and IV year B.E.(Ag.) are as follows :

Year of Study	Boys	Girls	Total
I B.E.(Ag.)	29	8	37
II B.E.(Ag.)	18	14	32
III B.E.(Ag.)	19	11	30
IV B.E. (Ag.)	25	10	35
Total	**91**	**43**	**134**

(i) All India Study Tour was conducted for IV year B.E.(Ag.) Students (1994-95 Batch) during VIII Semester. The students were taken in one batch from 27.09.98 to 16.10.99 to the following places :

1. Indian Institute of Sciences, Bangalore.
2. University of Agricultural Sciences, Bangalore.
3. Visveshwaraya Technical Museum, Bangalore.
4. Central Food Technology Research Institute, Mysore.
5. Aspee Sprayers, Mumbai.
6. Water Technology Centre, IARI,Delhi.
7. Indian Statistical Research Institute, New Delhi.
8. Medium Weather Range Prediction Centre, New Delhi.
9. Central Soil Salinity Research Institute, Karnal.
10. Central Soil and Water Conservation Research and Training Institute, Dehradun.
11. Indian Institute of Remote Sensing, Dehradun.
12. HMT Precision Tools, Pinjore

(ii) All India Study Tour was conducted for IV Year B.E.(Ag.) students (1995-96 Batch) during VII semester. The students were taken in one batch from 14.02.99 to 02.03.99 to the following places :

1. Aspee Sprayers, Mumbai.
2. IIT, Mumbai.
3. Department of Agriculture, IARI, New Delhi.
4. WTC,IARI, New Delhi.
5. Statistical Research Institute, New Delhi.
6. Indian Forest Research Institute, Dehradun.
7. Indian Institute of Remote Sensing, Dehradun.
8. HMT Tractors, Chandigargh.
9. Escorts India Limited, Faridabad.

(iii) Study Tour

a) The III Year B.E.(Ag.) students during V semester attended a study tour programme from 02.02.99 to 09.02.99. The places of studies / visit during the programme are as follows :

1. V.M.Thevar Plough Works, Melur.
2. Tractor Workshop, Agrl.Engineering Department, Madurai.
3. AC & RI, Madurai.
4. Nataraj Oil Mills, Uthunkudi, Madurai.
5. Indian Foods, Silaiman,Thirupuvam.
6. Fisheries Research Station, Mandapam, Ramnad.
7. SPIC,Tuticorin.
8. Thermal Power Station, Tuticorin.
9. Port, Tuticorin.
10. Wind Power Project & Bio-gas plant, Vivekananda Kendra, Kanyakumari.
11. Madras Chip Board & Biomass Gasification, Rajapalayam.

12. Periyar River Valley Project, Thekkadi.
13. Astrophysics Lab, Kodaikonal.

(iv) b)The II year B.E.(Ag.) students during IV semester attended a study tour programme during **January 6- 13th, 1999**. The places of studies undertaken during the programme are as follows :

1. TNAU Main Campus, Workshops & Labs, Coimbatore.
2. Tractor Workshop, Agricultural Department, Coimbatore.
3. Flow Tech. Power, Coimbatore.
4. Aliyar Dam, Aliyar.
5. Nilgiris Dist. Co-op.Milk Producers Union ltd., Nilgiris.
6. Sakthi Sugars, Erode.
7. Modem Food Industries Ltd., Chennai.
8. Insitute of Hydraulics and Hydrology, Poondi.
9. Cauvery Sugars and Chemicals, Chennai.

Practical Training :

A prctical training was conducted for IV year B.E.(Ag.) students during VII semester.The students were attached to the following firms / departments /Research Centres for a duration of one month and they acquired practical knowledge in the fileds of agricultural processing, soil and water conservation, farm machinery,etc.

1. Southem Region Farm Machinery Training & Testing Insitute, Tractor Nagar, Anantapur (A.P.)
2. Sakthi Sugars Ltd., Appakudal, Bhavani.
3. Erode District Co-op.Milk producers Union Ltd., Chithode.
4. Product Training Centre, TAFE, Chennai.
5. Central Soil and Water Conservation Research & Training Insitute, Ootacammund.

Village Stay Programme :

The IV B.E.(Ag.) Students of 1994-95 Batch attended Village Stay Programme during the month of October, 1998. The students were divided into two batches and placed in two villages viz., Anbil and Natarajapuram of Trichirappalli District. During their stay, the students were given training on various farming activities and the farm implements used by the farmers in their field.

The IV B.E.(Ag.) Students of 1995-96 Batch attended Village Stay Programme during July, 1998. The students were divided inti two batches and placed in two villages viz., T.Kalathur & Kannapadi of Perambalur District. During their stay, the students under went training in the field of watershed management of the two Villages. In the training, the students have given practice for reconnaisance survey, planning and design of water conservation structures.

Scholarship :

The following are the scholarship awarded to the students.

S.No.	Name of the Scholarship	No.of Students	Amount (Rs.)
1.	S.C.Scholarship	21	98,120.00
2.	B.C.Scholarship	52	97,059.00
3.	Govt.of India Scholarship) Chief Minister award to) SC &ST Students.)	5	7,500.00
	Total	**78**	**2,02,679.00**

HORTICULTURAL COLLEGE AND RESEARCH INSTITUTE, PERIYAKULAM

Dr.R.S.Azhakiamanavalan continued as the Dean of the College during the period under report.

1.Education

a) Degree Programmes offered : B.Sc. (Horticulture)
M.Sc.(Horticulture)

b) Admission

B.Sc.(Hort) Year	Boys	Girls	Total
1998-99	33	35	68
1997-98	33	33	66
1996-97	32	32	64
1995-96	31	27	58
Total	**129**	**127**	**256**
M.Sc.(Hort)			
1998-99	3	2	5
1997-98	4	1	5
Total	**7**	**3**	**10**

c) **Educational Tours organised**

(I) All India Study Tour

No.of Students	Places of Visit	Period
58 - Final B.Sc.(Hort) of 1995-96 batch	Bangalore - NDRI,GKVK - II HR Indo American Hybrid Prog-Mysore - CFTRI, Brindavan garden Delhi - ICAR, IARI, NBPGR Jaipur - National Meterology Rajput Garden Chandigarh -Rock garden - Shimla Rose garden, Sholan Y.S.Parmer Univ. of Hort. & Forestry,	28.01.1999 to 12.02.1999

	CPRI. Dehradun - FRI, Pant Nagar	
ii)Study Tour - I 64 students of II B.Sc.(Hort) of 1996-97 batch	Scholavandan Paramakudi Sundaramudayan Rameswaram Aruppukottai Tuticorin Killikulam Kanyakumari Petchiparai Courtalam Srivilliputhur	17.08.98 to 23.08.98
iii) Study Tour - II 58 students of III B.Sc.(Hort) of 1995-96 batch	Aliayarnagar Mettupalayam Bhavanisagar Coimbatore Paiyur Salem, Attur Vridhachalam Palur Pondicherry Sirugamani Trichy	

d) Village Stay programme

Period	Places Positioned	Activities carried out
21.10.98 to 20.11.98	Sirugamani, Thenkasi, Thadiyankudisai, Kodaikanal, Salem, Virinjipuram, Ooty, Thondamuthur, Srivilliputhur, Thevaram , Kannivadi, Vadipatti	1) Seeds and Seedling treatment 2) Planting and pruning method 3) Bio fertilizer treatment 4) Bavistion injection in Banana 5) Root feedling in coconut 6) IPM 7) Jam,Squash, Pickles making 8) Bordo mixture preparation

e) Scholarship particulars for the year 1998- 99

S.No.	Scholarship	No.of Students availed	Amount Rs.
1.	BC/MBC/DNC Scholarship	96 students	1,91,803
2.	BC/MBC/Loan Scholarship	2	4,650
3.	SC/ST State Scholarship	38	2,07,995
4.	SC/ST GOI Scholarship	2	6,000
5.	SC/ST full fee concession	11	16,395
6.	National talent scholarship	1	2,800
7.	TNAU Merit Scholarship UG	7	7,000
8.	TNAU Merit Scholarship PG	2	10,000
9.	ICAR Scholarship	2	9,600
10.	GOI Post matric scholarship other State (A.P.) ST student	1	2,225
11.	GOI Post Matric Scholarship other State (A.P.)SC Student	1	4,430

FOREST COLLAGE AND RESEARCH INSTITUTE METTUPALAYAM

Prof.S.Balaji,I.F.S. continued as the Dean of the College during the period under report.

1. Students Admission details for 98-99

	Boys	Girls	Total
I M.Sc.(Forestry)	17	2	19
II .M.Sc (Forestry)	9	1	10
I.Ph.D.(Forestry)	5	-	5

2. **Educational Tour performed by the Students**

Year	No.of Students	Duration	Place Visited
First Year (FOR 107) (0+1)	17 +2	7 days (26.08.99 to 01.09.99)	Topslip, Siruvani, Ooty
Second year (FOR 201) (0+2)	13+5	15 days (15.04.99 to 30.04.99)	Southern and Northern Districtsof Tamil Nadu and Kerala
Final Year (FOR 401)	12+1	15 days (15.04.99 to 05.05.99)	All India Tour

3. **Forest Stay Programme**

Year	No.of Students	Name of Divisions	Duration
Final Year FOR 401 *(0+9) VII* Semester	11+1	Dindigul Trichy,Harur	3 Months (06.01.99 to 12.04.99)
II year FOR 201 (0+9) III Semester	13+5	Coimbatore Dharmapuri Thirupathur Srivilliputhur	3 Months (06.01.99 to 12.04.99)

4. **Details of scholarship availed for the year 1998-99**

UG	SC	BC	MBC	DNC	National Merit
I year	8	7	-	-	3
II year	-	-	-	-	-
III year	3	-	-	-	-
IV year	4	1	-	-	-

P.G.	ICAR
I year	4
II year	5

Ph.D.	ICAR
I Year	-
II Year	-

ALL INDIA TOUR

The final year students numbering 13 were taken on All India tour from 15.04.99 to 05.05.99. They have visited Bangalore,.Goa, Mumbai, Dehradun, Shimla, Solan & New Delhi.

UNIVERSITY LIBRARY

The Tamilnadu Agricultural University Library is a learning information resource centre for the Under Graduate, Post Graduate students, Doctoral Research Scholars, Teachers, Researchers and Scientists of the Main Campus. It also caters the information needs of Research Scientists of consitituent colleges, Regional, Agricultural and Horticultural Research Stations of Tamilnadu Agricultural University.

The Library is the Central Library and has a good collection of over 1.52 Lakhs books and other publications comprising reference books, monographs, subject books, textbooks, back volumes of periodicals and other publications. The library is growing very fast due to the whole hearted financial provisions of the World Bank AHRD Project. The Library is a distinguished unit of Tamilnadu Agricultural University functioning as any other department with comparable responsibilities and status. It is an open Access Library and all the students and faculty members can make use of its resources, facilties, systems and services.

The Library has been profusely used by the Post Graduates and Teachers of Bharathiar University, Avinashilingam Deemed University of Higher Education for Women, Colleges and Research Institutes in and around Coimbatore city. The Library also caters the information needs of Scientists belonging to Sugarcane Breeding Institute, Central Institute for Cotton Research, Botanical Survey of India, Institute for Forest Genetics and Tree Breeding and to the Post Graduates of Annamalai University, Calicut University and colleges of Nilgiris, Periyar, Dindigul and Trichy districts.

Under the sponsorship of the World Bank AHRD Project, a substantial financial provisions has already been made to improve the facilities and services in the University Library to the user community as follows :

- Procured 270 titles with 1098 copies of textbooks in Agriculture, Horticulture and Agricultural Engineering.
- Audio visual materials like Televisions, Audio -Headphones, Video Cassette player & Furniture.
- Computer, Inkjet Printer, Scanner & other Accessories, Upgradation o Reprographic Machine.
- Water coolers, Wall clocks, Emergency Lights.
- Notice Boards, Display boards & guide boards.
- Rectified the defective fans & lights in both the Main Library and the Undergraduate library.
- Provided weld mesh for protection measures all over the outlets in the building.

- Establishment of Internet cum E-Mail facility for the Research Scholars to interact with experts.
- Establishment of a computer unit with 20 computers with peripherals to under take the automation of Library house keeping activites like acquisition of books & publications, periodical / serial control, Documents circulation control, online public Access Catalogue and Information Retrieval and Dissemination.

RESOURCES ACQUISITION PROGRAMME

PERIODICALS (Microdocuments)

During the year 1998-99, 03 titles of periodicals have been included to the list of 420 titles of current periodicals. About 207 renewal orders have been made to subscribe periodicals (both Foreign & Indian origin). About 146 reminders have been made to obtain the regular supply of current periodicals. Totally 2464 issues of current periodicals have been received and displayed for use. 45 Form A2s had been prepared. 99 drafts were obtained and 245 payments were made to subscribe the periodicals.

Totally a sum of Rs.12.58 Lakhs had been spent for the subcription of current periodicals during 1998-99.

BOOKS (Macrodocuments)

Under the World Bank AHRDP Project, an amount of Rs.1,21 Lakhs was allocated for the purchase of Text books in various disciplines of Agriculture and allied subjects. 149 titles with 326 copies of books were purchased for Rs.1,20,710/- under the World Bank AHRDP grants.

Under the ICAR Development Grants, an amount of Rs.25,000 was allocated for purchase of books in various disciplines. About 20 titles with 27 books were purchased under this provision.

About 1043 titles of books were suggested by faculty members for purchase under regular budget. After scrutiny 718 books were purchased under regular budget for a sum of Rs.7,31,500/-.

Totally 2425 documents (1071 books, 252 Gratis books, 994 Back volumes & 84 theses) were included in the stock of the Library during the period under report.

The University Library received 252 books and publications as gifts from National and International Agricultural Research Centres, Institutes and Individual Scientists. Notable among them are :

1. Indian Council of Agricultural Research (ICAR), New Delhi.
2. Asian Vegetable Research and Development Centre (AVRDC),Taiwan.
3. Food and Fertilizer Technology Centre for the Asian & Pacific Region (FFTC), Taiwan.

4. International Centre for Agricultural Research in the Dry Areas (ICARDA), Syria.
5. International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), India.
6. International Rice Research Institute (IRRI), Philippines.

INDIVIDUALS : Shri.Setti Santharam,U.S.A. & 2. Sri. Partha Das Gupta.

TECHNICAL PROCESSING OF DOCUMENTS

About 1335 books have been classified and catalogued to organise and shelve the books for use. 445 Subjects cards, 563 Author cards and 1547 Shelf Register Cards were prepared and inserted in the catalogue cabinet for use. 3346 Books cards, tracing cards and date lables have been prepared for the preparation of newly purchased books for use.

USER SERVICE

Lending service

The library is kept open for 331 days with 3565 hours for use during the year 1998-99.

The gate register has 70,738 entries of visitors to the Library. During the year 6,88,221 documents have been utilised by the users. 21,546 documents were issued on loan for home reading. 11,957 documents were received back after use. 19,288 over due entries were registered. 1997 new membership cards were prepared and distributed to P.G.& Ph.D Students and Staff Members of the University.244 no-due certificates have also been issued to out going students and staff members. The Over due collection was Rs.32,388.45. Permission was granted to 4,272 users belonging to other institutions of Tamilnadu and elsewhere to use the library and a sum of Rs.24,989 was collected as entry fee for the services rendered. An amount of Rs.800 was collected for the loss of 80 library membership tickets and Rs.15,974.60 was collected towards the loss of books.

The library has 2835 members from different categories of people as detailed below :

TEACHERS & OTHERS

Deans	04
Directors	12
Heads of Departments	32
Professors	125
Associate Professors	82
Assistant Professors	193
Technical Staff	925
Clerical / Ministerial Staff	498
Total	1871

STUDENTS

Under graduate Students	:	428
Post graduate Students	:	320
Doctoral research scholars	:	216
		964

REFERENCE AND INFORMATION SERVICE

The traditional service of guidance and assistance were provided to those who requested for literature search. Reprographic service has been provided through a private agency for the benefit of students, teachers and others.

AUDO VISUAL UNIT

The following audio visual materials have been procured and kept in the Library for the use of research scholars, scientists and student community.

1. Audio visual materials like Television, Video Cassette player, Audio Headphones have been purchased under AHRDP project.
2. CD-ROM disc : 17
3. Floppy Discs : 20
4. Video Cassettes : 28
5. Micro film strips : 17
6. Microfich : 103

RESOURCE MAINTENANCE

Under maintenance management as a routine job of the library, the issues of current periodicals, backvolumes of periodicals, reference books, subject books, monographs, textbooks, reports, bulletins, newsletters, etc., have been reshelved, then and there after use during all the working days of the year.

994 backvolumes of periodicals and 650 worn out books were prepared and sent for binding and received back after the completion of the work. The newly bound volumes were checked and brougt into stock,prepared for use and shelved in the respective section for use. The newly bound books were provided with book cards, tracing cards and date labels and then shelved in the respective subject areas. 704 worn out books were bound in the library itself. 132 issues of worn out current periodicals were temporarily stitched in the library and kept for reference.

UNDER GRADUATE LIBRARY

The Under Graduate Library is kept open for use from 4.00 PM to 8.00 PM on all working days for the use of undergraduate students. 8689 students visited the library. About 25,261 books were used in the Library premises and 10,774 books

were issued on loan for home reading and 9,390 were received back after use and 7,839 over due entries have been made. A sum of Rs.16,540.50 has been collected from the defaulters of loan of books as over due charges. 139 no due certificates and 270 library membership tickets were prepared and issued to 135 Under graduate students.

OFFICE ADMINISTRATION AND MAINTENANCE

The Library Committee met twice during the year and made useful suggestions for the collection, development and improvements in the facilities for the users. The budget allocation to the Library has been utilised as detailed below :

1. Books purchased	:	Rs. 7,31,500.00
2. Journals purchased	:	Rs. 12,54,050.00
3. Binding	:	Rs. 28,650.00
4. Stationery & other materials	:	Rs. 5,630.00
5. Weekly Wages	:	Rs. 1,40,280.00

STUDENTS' WELFARE

Dr.R.Sethupathi Ramalingam continued as Director of Students' Welfare during the period under report. The students' welfare activities were elaborated as follows :

At The Directorate of Students Welfare, the following activities are taken up.

- Placement services
- Entrepreneurship Development Programmes (Job Oriented Training Programme)
- Industry-Institution (TNAU) - Interaction Cell (III Cell) Scheme.

In additions to the above, students are trained in Hostel administration, NSS and NCC etc.,

Students Counselling

Under students counselling, programmes on career guidance, guiding students for taking up higher studies in the national and international universities are extended.

Guidance to students who start commercial enterprises and self employment activities are provided.

Ward counselling system is followed at TNAU. A group of 6 to 10 students are allotted to each ward counsellor who are mostly the teachers. The students meet

the ward counsellor and discuss their matters pertaining to education, personal problems and carrier guidance etc.,

The meeting of ward counsellor is convened periodically and progress reviews. Alumini of TNAU who are occupying higher positions are brought back to the University to give career guidance.

Recently Tmt.P.Amudha - IAS, General Manager, District Industries Centre, Coimbatore, Aluminus of TNAU, held interaction with students and ward counsellors and clarified the points raised for the ward counselling system to function effectively and on entrepreneurial development.

Under students counselling system, students are also encouraged to organize and participate in literary events like Quiz Programme, Thirukkural Dhinam or Thirukkural Day, Elocution, Debate and Extempose Programmes regularly. Every year large number of literary programmes are conducted. This gives / creates confidence among the students.

Under cultural programmes, students are persuaded and asked to participate in the programmes, one act play, skit, mimicry, mono acting etc. Similarly, students are participating on poster making, clay modeling, cartooning and rangoli.

Literary events. Theatre events, Fine Arts and Music Programmes are conducted regularly every year to impart talents among the students to develop their personality.

Co-curricular and Extra curricular activities

Tamil Nadu Agricultural University is the pioneering institution to introduce Physical Education, National Service Scheme and National Cadet Corps in the curriculum as a course with 0+1 credit in the semester system and regular classes are being conducted.

Cultural activities (debating, dancing, arts and photography, sports and games) are planned and conducted by University Sports Council which includes all colleges of TNAU. The council meets annually under the Chairmanship of the Vice-chancellor and plans the activities.

TNAU teams participate in many inter university level meets and have brought many laurels.

Enterpreneurship Development Programme (EDP)

Enterpreneurship Development Programme (EDP) are organized every year to III and IV year students of UG programmes in association with Small Industries Service Institute, District Industries Centre (DIC) and Lead District Bank. The important objectives of EDP are as follows.

- To organize seminars on thrust areas.
- To arrange campus interviews for selection of candidates required for member agro industries .
- To conduct seminars to motivate entrepreneurship among the students.
- To tie up arrangements for R and D activities with Industries.
- To provide consultancy service to the member agro-industries.

Students Welfare Committee

In the main campus at Coimbatore, the Director of Students Welfare, Tamilnadu Agricultural University, Coimbatore will serve as the Chairman of the students welfare committee and the Deans of the Colleges in the main campus shall serve as Members.

A Students Welfare Committee with the Dean as Chairman in each campus shall go into the running of the mess and other related matters of the hostel and students welfare.

The following will be the functions of the Committee:

(a) Review of mass rates and recommending measures for efficient economical running of the messes.

(b) Scrutinising the acceptance of the tenders obtained for groceries, mutton, fish, chicken eggs etc., and other purchases made for the students canteen.

(c) According sanction for purchases from hostel funds connected with provisions for amenities to the students of the hostel and sanction for write off of unserviceable hostel stocks.

(d) Consideration of all matter pertaining to the appointment, increments, pay leave (Other than casual leave) of all hostel staff including hostel/canteen stewards and making suitable recommendations.

(e) To conduct surprise inspection of the messes and canteen, to test the quality of preparations, to examine sanitation, cleanliness etc., and suggest measure for their improvements.

(f) The Committee will nominate the auditors for a term of three years to audit the hostel accounts every year and also scrutinise the auditor's report annually.

(g) The wardens may bring before the Committee for its considerations and recommendation, any matter not covered by the above rules and which in its opinion need consideration by the Committee.

(h) The Committee will hold its sitting ordinarily once in two months in the hostel premises.

4. RESEARCH

The major research achievements of the University in the areas of crop improvement, crop management, crop protection, Water Technology, Plant Molecular Biology, Bio-chemistry, Agricultural Micro-biology, Horticulture,Sericulture, Centre for Agricultural and Rural Development studies and Agricultural Engineering are presented in this chapter.

AGRICULTURE
RICE
CROP IMPROVEMENT
Varieties released

CO 47 : It is semi dwarf (80-92 cm), non lodging and matures in 110-115 days. Its average grain yield is 5,832 kg/ha. It possesses medium slender translucent white rice with acceptable cooking qualities. It is resistant to blast diseases. It is suitable for somavari, kar and Kuruvai season and is best alternative for ASD 18 and ADT 36 and it can also be recommended for replacing TKM 9 and IR 50.

Promising cultures :

AD 93060 : The culture AD 93060 is a selection from the entry IEI 11443. It is an extra early culture and matures in 89-93 days under direct seeded conditions. It is semi dwarf (89 cm) in stature with 6-7 productive tillers. Grains are short, bold with white rice. It gives an average yield of 3,512 kg/ha which is 20.4, 25.5 ad 51.0 percent higher yield than ASD 17, MDU 5 and ASD 18 respectively. It is being tested in Kanyakumari district.

AD 92215 : It is a high yielding medium duration (130 days) rice culture suitable for Thaladi season. It is being tested under Adaptive Research Trial during 1998-99. It has an yield potential of 6,000 kg/ha with 18 percent increase over ADT 38 .It possess medium slender white rice.

AD 97178 : It is a medium tall (119.8 cm) long duration (148 days) rice culture suitable for samba season. Its average yield from the station trials was 5.7 tons /ha with 7.9 percent increase over CR 1009. It is being tested under Adaptive Research Trails in 75 locations of 15 districts of Tamil Nadu. This culture is resistant to green leaf hopper, stem borer and blast and moderately resistant to leaf folder.

AS 93165 : It is a short duration (120-125 days) culture suitable for semi-dry and transplanted conditions of Kannipoo and Kumbapoo season in Kanyakumari district.This culture recorded an average yield of 5,813 kg/ha as compared to 5,363 kg/ha in ASD16.

TP 95002 : It is a natural mutant from CR 1009 .This field rice mutant has shown a better mean grain yield of 5,690 kg/ha as compared to 3,947 kg/ha of CR 1009

RICE CO 47
நெல் கோ 47

GROUNDNUT CO 3
நிலக்கடலை கோ 3

accounting for an increased yield of 44.2 percent. This culture possesses short bold rice and moderate tolerance to pest and blast disease. It is suited to Kumbapoo season.

TM 93503 : This is an early maturing (115 days) medium slender white rice culture having field resistance to tungro disease. In the somavari season experiments for the past three years, it has recorded an average yield of 7,384 kg/ha which is 17.2 and 14.7 percent increased yield over ADT 36 and ADT 37 respectively.

TM 93119 : This is an early maturing (115 days) long bold white rice culture having resistance to blast disease. In the past four navarai season experiments, it has recorded an average grain yield of 6,020 kg/ha which is 10.3 and 20.2 percent increased yield over ASD 36 and IR 50 respectively.

TM 960168 : This is an early maturing (115 days) short bold white rice culture having drought resistance under semi dry condition. It recorded an average grain yield of 4,357 kg/ha which is 52.5, 21.8, 59.1, 18.2 and 15.5 percent increase over PMK1, PMK2, TKM2, TVM10 and TKM11 respectively.

ACK198 : It is a derivative of cross IR 20/AS 37133 and matures in 120 days. It possess medium slender grain with tolerance to whorl maggot and leaf folder. This culture has recorded a mean grain yield of 5.304 kg/ha as against 5,295 kg/ha in ASD 16. It had exceed ASD 16 in Thanjavur, Kanyakumari, Salem, Dindigul, North Arcot, South Arcot, Coimbatore and Ramanathapuram districts.

CROP MANAGEMENT

The trails conducted at Thanjavur for efficient nitrogen management in transplanted rice using the chlorophyll meter (SPAD) and leaf colour chart (LCC) revealed that an LCC grade of 4 can be adopted as the threshold level for top dressing N to rice at weekly intervals.

Crop stage	Quantity of N (kg/ha)			
	1996-97		1998	
	Kuruvai	Thaladi/samba	Kuruvai	Thaladi/samba
Early Vegetative phase	14-21 DAT	14-21 DAT	30	20
Rapid Vegetative phase	28-42 DAT	28-42 DAT	45	30
Late Vegetative phase	49 - flowering	49 - flowering	30	20

The quantities of N to be applied as top dress (if the colour of the first formed leaf falls below LCC grade 4) depends on the stage of the crop.

Trails laid out with SWMRI prototype drum seeder during Kuruvai and Samba seasons revealed that sowing through drum seeder modified by SWMRI saves considerable labour force and results in higher grain yields due to timely sowing even under occasions of labour scarcity. There is a saving of Rs. 2,125/ha in the cost of cultivation as compared to conventional planting. Besides yield increased upto 400 kg/ha under drum seeding over conventional planting

S.No.	Site	Season	Variety	Grain yield / t/ha	
				Drum Sown	Transplant
1.	Vettikadu	Kuruvai/98	ADT 36	6.35	6.31
2.	Kakkarai Kottai	- do -	- do -	5.87	5.80
3.	Vandayari-ruppu	- do -	- do -	4.92	4.52
4.	Soorakottai	- do -	- do -	4.86	4.92
5.	SWMRI	- do -	ADT 37	4.64	4.62
6.	Vandayari-ruppu	Samba '98	ADT 39	4.12	4.00
7.	Vettikadu	- do -	- do -	4.59	4.61
8.	Raramuthirai-kottai	- do -	- do -	4.10	4.13
9.	Raramuthirai-kottai	- do -	IR 66	4.33	4.05
10.	Raramuthirai-kottai	- do -	ADT 38	4.41	4.19
		Mean		4.82	4.72

For maintaining the viability and vigour during storage in ASD 18, the seeds may be treated with $CaCo_3$ (3 g/kg) + Bleaching powder (4g/kg) before storage.

Maximisation of yield in rice hybrids and varieties conducted at Coimbatore during Kuruvai and Thaladi seasons from 1995-98 revealed that maximum yield of 7,655 kg/ha and 7,072 kg/ha was obtained by adopting a population of 100 hills / m^2 (10 x 10 cm) with a fertilizer dose of 200 : 75 : 100 kg NPK / ha in short duration CORH1 hybrid and ASD 18 respectively as against the recommended practice (61 hills / m^2 with 100 : 50 : 50 kg NPK / ha) having recorded 5.7 and 5.0 t/ha respectively.

A study on evaluation of suitable crop production management practices for rice pulse system conducted at Thanjavur indicated that transplanting rice for normal pudding after summer green manure + working with trampler + leveling with levelling board in Samba season and dibbling the blackgram immediately after the harvest of rice reorded the highest rice grain equivalent yield of 8,381 kg/ha/yr, net return of Rs 21,253 and CB ratio of 1:2.3 closely followed by line seeding after seed bed preparation + interculture with local plough when the crop is in three weeks old in Samba season and broadcasting blackgram 10 days prior to rice harvest with rice grain equivalent yield of 7,673 kg/ha/year, net return of Rs19,636 and CB ratio of 1:2.3.

Application of 112.5 N/ha in three splits viz., 50 kg N /ha at transplanting, 31.25 kg N at active tillering (21 DAT) and 31.25 kg N at panicle initiation (46 DAT) recorded the higher grain yield of 6.6 and 5.5 t/ha with and without green leaf manure (daincha - 6.25 t /ha) applications respectively in Trichy under salt affected soil having a pH of 9.0.

Insitu incorporation of daincha 12 t/ha coupled with 50 percent of inorganic N plus Azospirillum to rice CO43 registered the highest grain yield (6,897 kg/ha), higher net return (Rs.22,187 / ha) and higher cost benefit ratio (1:2.93) at Madurai.

Skipping basal N and K fertilizers and applying as top dressing with different levels and time revealed that application of FYM, Azospirillum, Zn SO_4 as basal and top dressing 25 percent N on 25, 45 and 60th day after transplanting and 50 percent K on 35 + 55 day after transplanting increased mean grain yield of rice as 7,603 kg/ha at Thirupathisaram as compared to the application of 25 percent N and K on 15,30,45 and 60th day after transplanting with a grain yield of 7,122 kg/ha.

Among the intercrops trial at Paramakodi, Kudhiraivali recorded the highest grain yield of 500 kg/ha when it was intercropped with paddy culture PM9405 at 6:2 ratio.

CROP PROTECTION

Experiments conducted at Aduthurai, Madurai and Tirurkuppam revealed that 25 percent of existing ETL for insecticides (2 egg masses / m^2) is the action threshold level for release of egg parasitoid *T.japonicum* for the management of the rice yellow stem borer. The yield and cost-benefit ratio were comparatively higher than the other treatments.

Action Threshold Level for Stem borer Management

Treatments@ ETL	Tirurkuppam		Madurai		Aduthurai	
	Grain yield (kg/ha)	C:B ratio (Rs)	Grain yield (kg/ha)	C:B ratio (Rs.)	Grain yield (kg/ha)	C:B ratio (Rs.)
25 percent	3215	1:1.52	3383	1:3.75	4650	1:1.60
50 " "	3005	1:1.40	3184	1:3.64	4600	1:1.58
75 " "	2417	1:1.16	3167	1:2.55	4000	1:1.46
100 " "	2165	1:1.03	2708	1:221	4150	1:1.44
Control	2130	-	2310	-	3250	-

The results of large scale demonstration of IPM technologies in farmers' fields at Thanjavur indicated that area under rice had not influenced the adoption of IPM technique. Educational level, resource level, farm experience of the decision

maker and University/ extension personnel contact have more influence on the adoption of IPM technique. Further IPM followed fields recorded higher mean yield of 7,430, 6,840 and 4,260 kg/ha at Pasupathikoil, Velur and Kondavittanthidal villages respectively as against 7,065, 5,945 and 3,920 kg/ha with farmers' practice. Besides IPM demonstrated fields recorded reduced incidence of diseases like blast, sheath blight, sheath rot, bacterial blight, brown spot and grain decoloration as compared to the farmers practice.

Seed treatment with commercially available, *P.fluorescens* strain Pf1 at 10 g/kg of seed followed by foliar application at 0.2 percent (1 kg/ha) at 45,55 and 65 days after transplanting besides controlling root nematode also controlled the white tip nematode showing only 6.06 percent chaffiness as compared to 13.9 percent in untreated check with a higher cost:benefit ratio 1:6.0.

Need based application of botanicals (No) on 50 percent ETL resulted in a favourable balance of pest and biocontrol agent. The spider population ranged from 15.0 to 30.4 per 20 hills as compared to 7.0 to 14.2 spiders per 20 hills in need based application of insecticides.

SORGHUM

CROP IMPROVEMENT

Promising Cultures :

Under breeding for high alcohol yielding sorghum varieties seven sorghum entries with high alcolhol recovery were raised at Vrinjipuram under rainfed condition. The TSS of juice ranged from 15-17 percent. The strain CSV15 recorded maximum alcolhol recovery of 7.9 percent followed by SPV 88 (7.5 percent), TNS 297 (7.3 percent) . SSVT -SR -350-12-15VO413 (7.2 percent), 192-15-3(6.9 percent), 2029-412 (6.8 percent) and 2026 -1-1-1 (6.3 percent).

CROP MANAGEMENT

Field trial conducted at Paiyur during 1995 to 1998 and OFT conducted at Paiyur village during 1998 revealed that the highest grainyield (1,586 kg/ha) and net income (Rs.4,721/ha) in sorghum was recorded with application of 75 percent recommended inorganic fertilizers + biofertilizers.

Treatments	Sorghum (Mean of 3 years)	
	Grain yield (kg/ha)	Net income (Rs/ha)
T1-Recommended inorganic fertilizers alone	1472	3940
T2-FYM 10 t/ha alone	1444	3235
T3-EFYM (750 kg/ha) alone	1443	3895
T4-N&P+FYM 10 t/ha.	1588	3505
T5-N + EFYM	1401	3569
T6-N &P + Biofertilizers	1577	4509

T7-75 percent N&P+ Biofertilizers	1586	4721
T8-EFYM + Biofertilizers	1402	3709
T9-Control	1016	2360

Among the three sources of P trial at Paiyur in Paiyur 2 sorghum, application of 40 kg/ha of DAP recorded the highest grain yield of 1,429 and 1,391 kg/ha with and without phosphobacteria respectively. The blanket recommendation of 20 kg/ha of super phosphate recorded only 1,146 kg/ha.

In the experiment on fertilizer management of micro watershed for sustainable productivity in dryland in K8 sorghum, the application of green leaf manure(sunn hemp) alone at 40 kg N / ha recorded highest grain yield of 1,273 kg/ha followed by the application of FYM at 40 kg N /ha (1,114 kg/ha).

Study conducted during N.E. monsoon of 1998 under rainfed conditions in vertisols of Coimbatore revealed that the optimum planting ratio for soybean + sorghum as 6:3 for getting higher yield and net returns which recorded increased net return by Rs.3,827 over, sorghum alone.

CROP PROTECTION

Multilocation experiments conducted for the management of insect pests of sorghum revealed that application of Neem seed kernel extract 5 percent, TNAU Neem oil 60 EC(C) 3 percent and Neem Azal 1 percent were highly effective in reducing the shootfly damage, population of headbug and midge and increasing the yield

Treatments	Short fly (%)		Head bug No/panicle		Midge (%) damage	
	Coim-batore	Virinji-puram	Coim-batore	Kovil-pattai	Virinji-puram	Aruppu-kottai
NSKE (5%)	43.53	5.2	21.30	12.97	6.50	18.5
TNAU Neem oil 60 EC(C) 3%	45.35	7.5	23.00	11.50	7.27	12.0
Neem Azal (1%)	37.24	8.1	26.37	11.20	8.20	15.0
Control	47.91	45.50	38.47	21.93	24.0	35.5

Grain yield (kg/ha)

Treatment	Coimbatore	Vimjipuram	Aruppukottai	Kovilpatti
NSKE (5%)	1355	1034	2585	950
TNAU Neem oil 60 EC(C) 3%	1333	980	2610	975
Neem Azal (1%)	1336	942	2678	971
Control	1244	625	2320	551

Experiments conducted at Kovilpatti indicated that two applications of Neem seed kernel extract (3 percent) and Neem oil (3 percent) based on ETL effectively suppressed the population of headbug and enhanced the yield.

Treatment	1996 -97 No/panicle		Yield	1997-98 No/panicle		Yield	1998-99 No/panicle		Yield
	3 DAT	10 DAT	kg/ha	3 DAT	10 DAT	(kg/ha)	3 DAT	10 DAT	(kg/ha)
Neem oil (3%)	6.1	9.5	432	2.6	3.2	2480	6.1	10.6	1156
NSKE (3%)	4.7	6.2	514	4.8	5.4	2202	8.5	12.1	1070
Control	26.6	30.2	126	28.0	35.1	1420	18.3	24.8	638

CUMBU

CROP IMPROVEMENT

Promising culture

TNBH 5635 : The hybrid TNBH 5635 matures in 85 days with a mean yield of 2,600 kg/ha under rainfed and 3,400 kg/ha under irrigated condition. It is a medium tall and non lodging and resistant to downy mildew disease.

CROP MANAGEMENT

Intercropping pearl millet (X7) + sunflower (CO3) at 2:1 resulted in a return of Rs 5,786 / ha during North east monsoon

Treatments	1996-97 Pearl millet (kg/ha)	1996-97 Inter crop (kg/ha)	1997-98 Pearl millet (kg/ha)	1997-98 Inter crop (kg/ha)	1998-99 Pearl millet (kg/ha)	1998-99 Inter crop (kg/ha)	Mean monetary return (Rs./ha)
Pearl Millet	1230	-	723	-	808	-	2195
Pearl Millet & Cowpea	607	66	673	20	899	failure	2078
Pearl millet & Sunflower	613	628	657	237	851	886	5786
Rainfall (mm)	420	-	598	-	571	-	-

The experiments conducted at Coimbatore during North East monsoon season of 1997-98 and 1998-'99 in pearlmillet (x7) revealed that *insitu* moisture conservations of flat sowing followed by forming furrows after intercultivation (35 DAS) recorded higher yield (1,789 kg/ha) as compared to the farmers' practice of flat sowing

Treatments	Grain yield (kg/ha)		Mean yield (kg/ha)
	1997-98	1998-'99	
Farmers practice (flat sowing)	1933	1068	1500
Flat sowing followed by forming furrows 35 DAS after intercultural operation	2056	1523	1783

CROP PROTECTION

Seed treatment with *T.harzianum* and *P.fluorescens* of 10g/kg reduced cumbu downy mildew incidence upto 65 DAS

For the effective management of storage fungi and normal germination of cumbu, seed treatment with capton and storage of the treated seeds in polythene bag found effective.

RAGI
CROP IMPROVEMENT
Promising Culture

DPI 2011 & DPI 2192 : These two high yielding ragi cultures had given consistently higher yield than the checks CO 13 and Paiyur 1. DPI 2011 is a short duration culture and matures in 95 days and DPI 2192 is a medium duration culture maturing in 133 days. In multilocation trial conducted during kharif 98 under rainfed, DPI 2011 recorded the highest grain yield of 3,470 kg/ha with an increase 33.3 percent over Paiyur 1 and 43.2 percent over Co 13. The culture DPI 2192 recorded a grain yield of 3,113 kg/ha registering 19.6 and 28.5 percent increased yield over Paiyur 1 and CO 13 respectively.

CROP MANAGEMENT

At Coimbatore, among the seed hardening treatments Kcl (1%) + Ca Cl_2 (1%) maintained high chlorophyll stability index (85.85 percent) and proline content 1,175 μg / g)

At Trichy, application of coirpith of 10 t/ha with 75 percent of soil test recommendations (52.5 kg N/ha) along with seed cum soil application of Azospirillum recorded the highest grain yield 3.9 t/ha by TRY 1 ragi in salt affected soil by utilizing the irrigation water having the pH of 9.

CROP PROTECTION

Sparying of Tricyclazole (0.05 percent) one spray at 50 percent ear emergence, Pseudomonas flourescens at 50 percent ear emergence and another spary at 10 days after 1st spraying more effective in controlling the leaf, neck and finger blast of ragi at Coimbatore and Paiyur.

Treatment	Coimbatore			Paiyur		
	Leaf (Grade)	Neck (%)	Finger (%)	Leaf (Grade)	Neck (%)	Finger (%)
Foliar spray of Tricyclazole (0.05 percent) one spray	1.0	10.3	4.3	2.7	8.5	5.2
Foliar spary of Pseudomonas fluorecens (two sprays)	2.0	13.6	5.1	2.7	8.4	3.5
Control (water spray)	4.0	25.0	15.5	4.5	20.5	9.5

SAMAI
CROP IMPROVEMENT
Promising culture

DPI 2386 : This culture matures 17 days earlier to Paiyur 1. It recorded the highest grainyield of 754 kg/ha as compared to 338 kg/ha recorded by CO 3 and 330 kg/ha recorded by Paiyur 1.

CROP MANAGEMENT

Field experiments conducted with Samai Paiyur 1 indicated that the application of 20 kg Zn SO_4 / ha, 10 kg Fe SO_4 / ha and 5 kg Cu SO_4 / ha registered the highest grain yield of 965 kg/ha.

PULSES
CROP IMPROVEMENT
Redgram
Varieties released

Vamban 2: A high yielding redgram culture VRG 4 (ICPL 341 x Bhavanisagar Local) was released as Vamban 2. It is a long duration (180 days) crop with an yield of 1,050 kg/ha. It is resistant to sterility mosaic disease and suitable for rainfed cultivation during June -July in the entire state of Tamil Nadu.

APK 1: It matures in 95-105 days with a mean grain yield of 867 kg/ha which is 34.2 percent higher than Vamban 1. It has semi-spreading plant type, determinate

REDGRAM VAMBAN 2
துவரை வம்பன் 2

BUTTON MUSHROOM Ooty 1
மொட்டுக் காளான் ஊட்டி 1

REDGRAM APK 1
துவரை ஏபிகே 1

flowering pattern with resistance to sterility mosaic virus disease. It is recommended for the cultivation in the districts of Virudhunagar, Ramanathapuram, Sivaganga, Madurai, Dindigul, Tuticorin, Tirunelveli, Trichy, Salem, Dharmapuri and Coimbatore.

Promising cultures

CORG 9407 : This culture maturing in 105 days recorded a mean yield of 940 kg/ha, registering an increased yield of 36.8 percent over Vamban 1.

VRG 42 : This is a short duration (100 days) redgram culture and it is resistant to sterility mosaic disease. It yielded 612 kg/ha in multilocation trial which is 12.0 percent higher than Vamban 1.

CROP MANAGEMENT

Among the different dates of sowing in the short duration redgram variety APK 1, early sowing during September first fortnight has recorded significantly higher grain yield (812 kg/ha) and B-C ratio of Rs.3.48:1.00 at Aruppukottai. Among the various population level trial.4.0 lakh plants/ ha at 25 x 10 cm spacing recorded the highest grain yield (389 kg/ha) and B-C ratio of Rs.1.74:1.00

Study to findout a suitable integrated weed management practice for redgram-sorghum intercropping system conducted at Coimbatore during kharif1996-97 indicated that Pendimethalin 1.0 kg/ha + hand weeding was found to be more efficient in controlling weeds.

CROP PROTECTION

Blister beetle damage was lowest (11.8 percent) in Dichlorvos 76 EC treated plot (500 ml/ha) and the treatment registered the maximum pod yield of 675 kg/ha.

BLACK GRAM
CROP IMPROVEMENT
Promising cultures

VBG 23 : This is a short duration culture (60-65 days) with resistance to yellow mosaic disease. It yielded 512 kg/ha is multilocation trials which is 11.3 and 11.5 percent higher than Vamban 2 and CO 5 respectively..

ADB 2003 : It is a high yielding culture which recorded a mean yield of 552 kg/ha with 10.4 percent increase over ADT 5 .

VBG 522 and VBG 55 : These two cultures are resistant to yellow mosaic disease and yielded 524 and 755 kg/ha respectively as compared to Vamban 1, Vamban 2 and CO 5 which recorded 294, 461 and 299 kg/ha respectively.

CROP MANAGEMENT

On farm trials conducted during 1998 in 10 locations in Pudukottai district revealed that application of Zn SO_4 at 25 kg/ha recorded higher yield in blackgram in all locations. Application of Zn SO_4 at 25 kg /ha along with the recommended NPK recorded higher mean B-C ratio of 2.22:1.00 where as the B-C ratio was 1.84:1.00 without Zn SO_4 applications. Hence application of Zn SO_4 at 25 kg/ha can be recommended for irrigated black gram and greengram for the lateritic soils of Pudukottai area.

Location	Yield kg/ha		Benefit cost ratio	
	NPK alone	Rec.NPK Zn SO_4 at 25 kg/ha	Local	Improvement
Kothakottai	764	884	2.70:1.00	2.80:1.00
Kothakottai	670	820	2.15:1.00	2.60:1.00
Rengasamuthiram	450	600	1.70:1.00	2.00:1.00
Koolaiyan kadu	532	610	1.60:1.00	1.90:1.00
Alangudi	510	600	1.50:1.00	1.85:1.00
Senthagudi	535	775	2.70:1.00	2.58:1.00
PadampattiSouth	495	612	1.45:1.00	1.83:1.00
Muthupattinam	475	585	1.35:1.00	1.75:1.00
Senthagudi	725	800	2.30:1.00	2.58:1.00
Alangudi	525	713	1.60:1.00	2.30:1.00
Mean	568	699	1.89:1.00	2.22:1.00

Farm trials conducted in ten locations in and around Vamban to study the effect of potash application to pulses (Blackgram and Greengram) recorded that in blackgram the percentage of yield increase ranged from 19 to 49 and in greengram from 14 to 27 . Similarly the cost benefit ratio ranged from 1.00:2.62 to 1.00 : 3.13 in blackgram and from 1.00 : 1.94 to 1.00 :3.15 in greengram. Hence application of 20 kg K_2O / ha is recommended for black gram and greengram in the lateritic soils of Pudukottai district.

Location	Crop & variety	Grain yield kg/ha		yield increase	Benefit cost ratio
		without potash	with potash (20 kg /k_{20} / ha		
Auudayarpatti	Blackgram (Vamban 2)	612	865	41	2.80:1.00
Mayanoor	- do --	536	773	44	2.75:1.00
Kothakottai	- do --	750	905	21	2.91:1.00
Senthagudi	- do --	593	706	19	2.62 :1.00

Periyanaya-kipuram	- do –	620	926	49	3.13 :1.00
Kathakurichi	Greengram (Vamban 1)	513	632	24	2.05:1.00
Muthupattinam	- do –	428	540	26	1.94:1.00
Onangudi	- do –	825	938	14	3.15:1.00
Senthagudi	- do –	528	670	27	2.25 :1.00
Kovilpatti	- do –	487	565	16	1.96:1.00

Field trial conducted during kharif season (97 and 98) at Coimbatore to study the effect of dual inoculation of *Rhizobium sp* (COC.10) and Antagonistic Bacteria (AB_3) on the grain yield of blackgram (CO 5) indicated that dual inoculation has enhanced the grain yield by 6.20 and 8.05 percent over Rhizobium inoculation alone during kharif 97 and kharif 98 respectively.

Treatment	Grain yield (kg/ha)			
	Kharif '97	% increase over Rhizobium	Kharif '98	% increase over Rhizobium
Control	538	-	548	
Rhizobium (COC.10)	707	-	670	
Rhizobium + AB 3	753	6.20	728	8.65

Studies conducted on the effect of different phenolic acids on the growth and yield of blackgram (CoC) at Coimbatore indicated that the foliar spray of salicylic acid or benezoic acid 100 ppm on 30th and 45th day enhanced the pod yield by 24 and 21 percent respectively over control.

Raising the blackgram (ADT 3) in ridges and furrows at 25 x 20 cm recorded more pod number (23.8), seeds per pod (6.3), seed yield per plant (7.3g), seed yield per ha (1,433 kg) and germination of resultant seeds. (98 percent)

GREEN GRAM
CROP IMPROVEMENT
Variety released

CO 6: It is a hybrid derivative of the cross between WGG 37 and CO 5. It yielded on an average 98.2 kg/ha as compared to the yields of 783, 815 and 814 kg/ha by Vamban 1. CO 5 and KM 2 respectively. The variety is recommended for sowing during June-July, Sept-Oct and Feb-March in all the district of Tamil Nadu with the exception of the Nilgiris and Kanyakumari districts.

Promising cultures

VGG 9 : It is a short duration culture (60-65 days) with tolerance to yellow mosaic disease. It yielded 554 kg/ha which is 6.0, 7.0 and 16.6 percent higher than Vamban 1, CO 5 and KM 2 respectively in multilocation trials.

VMGG 97001 : It is a reselection from K851 green gram. The culture proved its superiority over KM 2 and VBN 1 by recording 994.5 kg/ha which is 19.9 and 20.7 percent yield increase over KM 2 and VBN 1 respectively. It also recorded the highest yield of 1,169 kg/ha which is 39.9 percent increase over ADT 3 in the rice fallow condition.

CROP MANAGEMENT

Foliar spray of salicylic acid (100) ppm at the rate of 50g / 500 litres(ha) on 30th and 45th day in greengram (CO5) enhanced the grain yield by 16.4 percent over control. The increase in yield was due to higher leaf area, dry matter and pods.

Greengram (Vamban 1) sown during III week of July with a spacing of 30 x10 cm recorded higher grain yield (430 kg/ha) at Vamban under rainfed situation.

CROP PROTECTION

Seed treatment done at Coimbatore with TNAU formulation, No 60 EC(C) at 20 ml/kg seed for six hours before sowing the seeds of blackgram, greengram and cowpea was found effective in the control of *H.cajani* to the tune of 50 percent reduction in number of cysts and eggs per cyst as compared to the check.

OIL SEEDS
CROP IMPROVEMENT
Varieties released

CO 3 : The bunch culture TNAU 256 has been released as CO 3. This variety is capable of giving a mean pod yield of 2,150 and 1,750 kg/ha during rabi and kharif respectively. This variety is with dark green foliage and resistant to Bud Necrosis Disease. This variety has hand picked selection type kernels which is highly suitable for export purpose.

ALR 3: It is a bunch variety and matures in 110-115 days. In kharif season, this variety recorded an average yield of 2,095 kg/ha registering 50, 27 and 24 percent over ALR 2, VRI 4 and VRI 2 respectively. The shelling percentage is 69 and it contains 50 percent oil. Besides, this variety is resistant to rust, leaf hopper and thrips and moderately resistant to late leaf spot.

Promising Cultures

VG 9711 : This culture is a derivative of the cross CG 26 x ICGS 44 and it matures in 105-110 days. It yielded a mean yield of 2,683 kg/ha as compared to VRI 2 (1,694

GROUNDNUT ALR 3
நிலக்கடலை ஏ எல் ஆர் 3

SWEET POTATO CO CIP 1
சர்க்கரை வள்ளிக் கிழங்கு கோ சி ஐ பி 1

kg/ha) and VRI 4(1,679 kg/ha). The kernels are red and medium in size. The shelling outturn of the culture is 76 percent and it contains 51.8 percent oil.

TVG 9363 : This culture is a cross derivative of J(E) 2 x ICGS 76. It matures in 108 days. It yielded a mean yield of 2,016 kg/ha which is 29.6 and 25.2 percent increase over TMV 7 and VRI 2 respectively. It is moderately resistant to rust and leaf spot and the seed contains 48.5 percent oil.

CROP MANAGEMENT

Field experiments conducted at Vridhachalam to formulate appropriate package for simultaneous control of both perennial and annual weeds in groundnut revealed that the presowing (15 days prior to sowing of groundnut) blanket application of glyphosphate at 1.0 percent with 1.0 percent ammonium sulphate and 0.1 percent teepol followed by pre emergence metalachlor at 1.0 kg ai/ha along with one hand weeding on 30 days after sowing of groundnut registered the maximum pod yield of 2,359 kg/ha which was 20.1 percent increase over recommended package of pre emergence of metalachlor at 1.0 kg ai/ha one hand weeding on 30 days after sowing (1,963 kg/ha).

Study conducted with ferromagnesium, a by product from an industry, containing gypsum (55.23 percent and iron (as Fe_2O_3 10.4 percent) utilizing CO2 groundnut in an iron deficient calcareous soil revealed that the application of ferrogypsum was more effective (48.9 percent yield increase over NPK control) than agricultural gypsum (24.2 percent yield increase over control)

Treatments	Pod yield (kg/ha)
Agricultural Gypsum at 400 kg/ha	1,620
Ferrogypsum at equivalent to supply Ca as in agrl. gypsum.	1,916
Agricultural gypsum @ 400 kg/ha + Ferrous sulphate @ 50 kg/h.a (soil application).	1,928
Agricultural gypsum at 400 kg/ha + Ferrous sulphate (foliar spray) 1 percent Ferrous sulphate + 0.1 percent citric acid on 30th , 40th and 50th day after sowing.	1,873

Combined soil application of Fe SO_4, Zn SO_4 and Borax at 10, 5 and 1 kg/ha respectively to groundnut enhanced the net return by 21.5 percent against control and return per rupee invested was also higher (2.24 :1.00)

Field experiments conducted during Rabi 1988 at Vridhachalam in groundnut revealed that crop raised under broad-bed-furrow with polythene mulch recorded

maximum pod yield of 2,329 kg/ha followed by flat bed without polythene film mulch (2,037 kg/ha), broad bed furrow without polythene mulch (1,762 kg/h) and broad bed furrow without polythene mulch (1,211 kg/ha).

Crop Protection

Field trials conducted at Coimbatore on Groundnut *H.armigera* and *S.litura* to evaluate the efficacy of spicturin revealed that Chlorphyriphos @ 1.00 l.ha was suprior in recording lower number of larvae, higher percent reduction of larvae, lower percentage of leaf damage and highest yield followed by spicturin at 2.00,1.50 and 1.00 l/ha each with Nuclear Polyhetrosis virus. However the cost benefit ratios were higher in Chlorpyriphos as compared to spraying NPV alone and spicturin.

SESAMUM

CROP IMPROVEMENT

Promising cultures

VS 9104 : This culture matures within 85 days and has brown seed coat. It has an oil content of 51.0 percent. In the multilocation trails conducted during Rabi 1996-'97 it has yielded a mean seed yield 601 kg/ha. During summer 1997, it has yielded 650 kg/ha which is 11.9 and 7.4 percent increase over TMV 4 and TMV 6 respectively.

VS 9516 : It is derived from the cross VS 9003 x TMV 3. This black seeded culture has an oil content of 32.3 percent. During rabi and summer season it has recorded an average seed yield of 775 and 900 kg/ha respectively. The increase over TMV 3 and TMV 4 being 16 and 21 percent respectively. In the multilocation trial conducted during summer 1997, it has recorded a mean seed yield of 677 kg/ha which is 16.4 and 11.9 percent increase over TMV 4 and TMV 6 respectively.

CROP MANAGEMENT

Studies conducted at Killikulam revealed that for getting higher yield of summer irrigated sesamum in Tambiraparani basin, sowing has to be done during second fortnight of February and N has to be applied at 40 kg/ha in two splits ie. 50 percent basal + 50 percent on 30 days after sowing and 30 kg/ha of P and K as basal.

	Seed yield of sesamum (kg/ha)			
Treatments	1995	1997	1998	Mean
Dates of Sowing				
February I^{st}	554	617	703	625
February 16th	610	856	884	780
March 3rd	612	718	738	689
Management				
20 kg N/ha (basal)	452	551	585	523
20 kg N/ha basal+30 DAS	462	621	672	585
40 kg N/ha basal	626	750	745	707

40 kg N/ha + 30 DAS	676	892	855	808
60 kg N/ha basal	667	748	919	778
60 Kg N/ha basal+30 DAS	671	797	895	788

Sesamum seeds pelleted with Zn So_4+Mn So_4 @ 1 g/kg with azospirillum 120g/kg has recorded the highest seed yield of 369 kg/ha which is 7.0 percent increase over control at Tindivanam during cold weather season of 1997. During the summer irrigated season in 1998, the same treatment recorded the highest seed yield of 583 kg/ha which is 8.2 percent increase over the control.

Application of Alachlor granules at 1.5 kg ai/ha as sandmix followed by one hand weeding on 30 days after sowing has been effective and economic for weed control in rice fallow seasamum resulting in increased weed control efficiency (79.8 percent), higher seed yield (979 kg/ha) and greater return per rupee invested (Rs.2.66) at Killikulam.

SUNFLOWER
CROP IMPROVEMENT
Promising culture

TNSH 9522 : This promising culture is hybrid of CMS 234 A x R 272. It has yielded a mean yield of 2, 825 kg/ha. It is tolerant to rust and alternaria leaf spot. The seed contains 39.6 percent oil content.

CROP MANAGEMENT

Seeds of sunflower varieties viz CO 1, CO 2 & CO 3 were treated with chlorine based halogen formulation at 3 g/kg and packed in cloth bag maintained high germination (more than 70 percent) and vigour for more than eight months under ambient conditions. The treatment offered good protection against storage pests and pathogens.

Studies carriedout to find out the effect of sunflower stalk incorporation on the succeeding soybean crop revealed that incorporation either naturally decomposed or decomposed by treating with *Trichoderma viride* or cowdung slurry (10 percent) did not have deleterius effect.

COCONUT
CROP IMPROVEMENT
Promising culture

Among the twenty tall genotypes maintained (36 years old), West Coast Tall (WCT) recorded the highest nut yield of 135 nuts / palm followed by Spicata (134 nuts), Guam (133 nuts), Andaman Ordinary (118 nuts), Kappadam and East Coast Tall (114 nuts).WTC also recorded the highest cumulative mean nut yield (99.6 nuts / palm/ year) and copra yield (13.2 kg / palm/ year)

Among the 21 hybrids (24 years) the hybrids ECT x MOD recorded the highest annual nut yield of 157 nuts / palm. ECT x MOD also recorded the highest copra yield (17.8 kg / palm / year) with 11 percent over VHC 2 (16.0 kg/palm).

CROP MANAGEMENT

At Veppankulam, highest nut yield (173 nuts / palm) in adult coconut palm (VHC 2) was recorded by application of 1.0 :0.25:2.0 NPK kg/palm /year followed by 1.0 :0.50:1.0 NPK kg/palm /year with 168 nuts /palm /year.

Drip irrigation at 100 percent evaporation (Eo) and Basin irrigation at IW / CPE ratio 1.0 at 4 cm depth recorded a nut yield of 138 and 136 nuts / palm / year at Aliyarnagar. The maximum water requirement ranged from 60 to 67 lit/palm/ day during Feb-May and minimum requirement of 19 lit / day palm was observed during October.

COTTON

CROP IMPROVEMENT

Variety released

MCU 12 : It is a derivative from the cross LRA - 5166 and MCU 11 and has a duration of 150 days. It possess a ginning out turn of 34.8 percent as against 34.5 percent for MCU 5 and 34.9 percent for LRA 5166. In respect of fibre qualities, it is comparable to MCU 5 in fibre length, strength and fineness and superior to LRA-5166 for the above properties. It has recorded an average seed cotton yield of 16 quintals / ha which is 23.1 percent increase over MCU 5 and 24.5 percent increase over LRA 5166.

Promising cultures

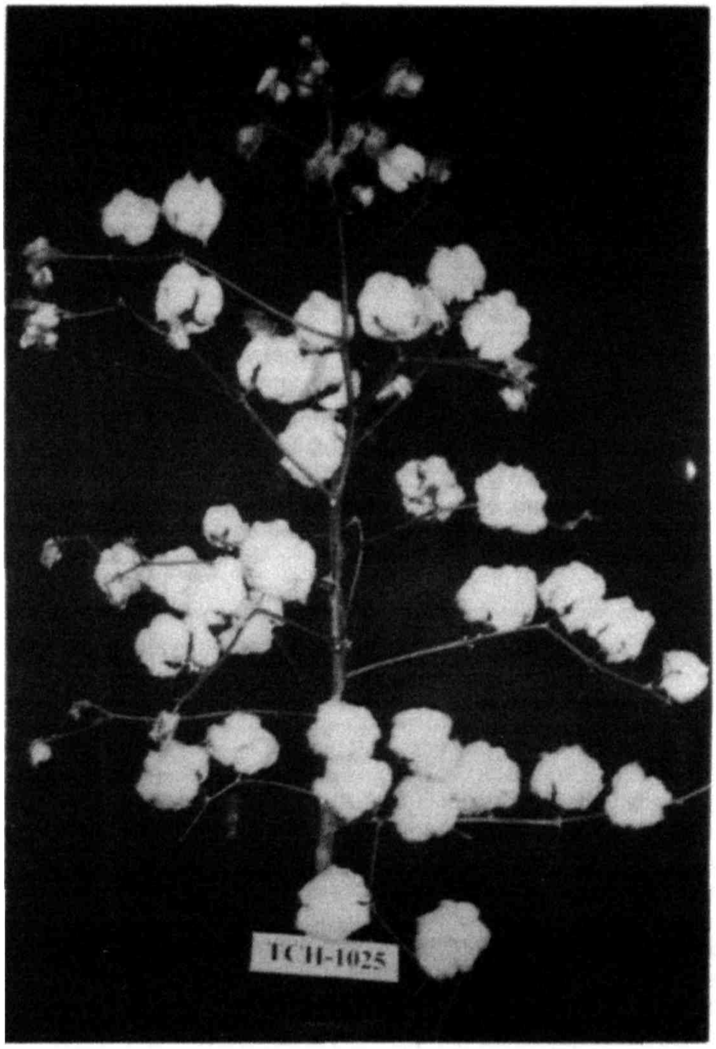
TKA 9410 : At Koilpatti, this culture has recorded a mean yield of 723 kg seed cotton yield /ha registering 32 percent increased yield over K11 (546 kg/ha). The mean halo length and the ginning percentage are 22.0 mm and 32.1 percent respectively.

TKKH 1 : This promising culture suitable for rainfed red soil tract recorded the highest kapas yield of 510 kg /ha. The increase in seed cotton yield over MCU 10 (420 kg/ha) was found to be 21 percent. It is under evaluation in multilocation trials for the second year in succession.

CROP MANAGEMENT

Studies conducted at Srivilliputhur showed that in cotton - greengram-rice cropping system application of 75 percent N +Azospirillum + Phosbacterium + all P & K to cotton, 75 percent N + rhizobium + phosphobacterium + all P to greengram and 75 percent Azospirillum + Phosphobacterium + all P & K to rice was found to be advantageous with higher monetary returns.

At Madurai, SVPR 2 perfomed well as compared to LRA 5166 and MCU 5, SVPR 2 recorded higher net return, net return per rupee invested and B/C ratio followed by LRA 5166. Topping incresed the net return by 19.4 percent. Application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of N in three equal splits (33 1/3 percent at each stage) at basal and 40 and 60 days after sowing recorded an increase in net return by 20 1 percent.

In cotton, application of Azospirillium and *Trichoderma viride* registered an yield of 1,300 kg/ha where as when these two organisum, were combined with imidachloprid, the yield was reduced to 944 kg/ha indicating the adverse effect of chemical on bio inoculants.

At Coimbatore, application of recommended dose of NPK at 80:40:40 kg/ha in two splits on 40 and 60 days after sowing without any basal application resulted an increase in yield by 23.6 percent over recommended practice of application of 40:40:40 kg NPK /ha as basal and 40 kg N as top dress on 45 days after sowing.

FORAGE CROPS
CROP IMPROVEMENT
Variety released

Pudia Soundal : This is highly tolerant to the psyllid pest *Heteropsylla aebana* and does not show any adverse symtons like arrested growth, shootly mould on leaves etc., It yields about 40 t/ ha/year of green fodder which is on par with the completely susceptible variety CO 1 and hence green fodder will be available throughout the year. Quality wise, it is on par with CO 1 in crude protein, crude fat and fibre. The content of phosphorus, calcium, iron and magnesium is significantly higher. The anti-nutrient tannin content is also significantly lower in Pudia soundal.

Promising culture
Cumbu Napier Hybrids
ACK 2 : This culture recorded 223 t/ha/year of green fodder yield which is 36.8 and 39.4 percent higher than CO 2 and CO 3 respectively.

CROP MANAGEMENT

A dual inoculation of Azospirillum and Phosphobacteria was effective and yielded better compared to individual inoculation and untreated control. The fodder yield increase in dual inoculations of Azospirillum and phosphobacteria was to the tune of 2.6 to 3.5 times as compared to uninoculated control.

Application of 75 percent recommended NPK fertilizer + vermicompost @ 10 t/ ha recorded the highest green fodder yield of 422.1 and 357.4 t/ha year during 1997-98 and 1998-99 respectively with a mean net return of Rs 87,486 / ha /year in Bajra-Napier hybrid grass (CO 3) at Coimbatore.

Application of rock phosphate at 200 kg/ha or DAP 100 kg + Gypsum 200 kg per ha during monsoon seasons will help in rejuvenation of degraded pastures in semiarid regions.

Deenanath based cowpea inter cropping system registered higher green fodder yield (30.05 t/ha), crude protein production (816.3 kg /ha) and net return (5,167 Rs/ ha).

SUGAR CANE

CROP IMPROVEMENT

Variety released

CoC 99061 : It is an intervarietal hybrid of Co 6806 x Co 740. CoC 99061 is a mid-late sugarcane variety with a duration of 330-360 days. It is an erect medium thick cane . It is non-lodging, non flowering, moderately resistant to red rot and tolerant to borers. In plant crop, CoC 99061 registered a cane yield of 130.33 t/ha as against 116.00 t/ha in CoG 93076 accounting for 12.35 percent increase in cane yield. In plant crop, CoC 99061 registered 15.59 t/ha of sugar yield as compared to 13.33 t/ha for CoG 93076 registering 16.95 percent increase in sugar yield. In ratoon crop, it registered 15.08 t/ha of sugar yield as against 13.56 t/ha for CoG 93076 with an increase of 11.21 percent .

Promising clones

Si 93066 and Si 94010 : These two clones have been found to be high cane yielding (145 to 150 t/ha) as well as sugar yield (17.5 to 18.0 t/ha) with moderate resistance for redrot and smut. Besides these two clones have been found to be alkaline tolerant.

G 95754 : This clone recorded the higher yield of 108.69 t cane and 14.30 t cane yield per hectare as against 96.81 t cane and 12.01 t sugar yield per hectare in COG 94077.

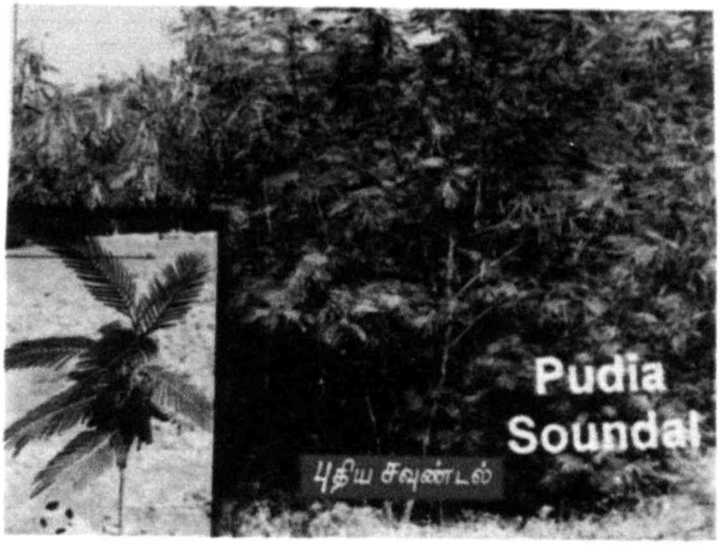
Breeder Seed Production and Distribution

With a view to supply quality seeds to the farming community and to support the state development departments associated with Agriculture and seed industry, Tamil Nadu Agricultural University is supplying breeder seed for further multiplication and distribution. Against the total targeted indent of 1,28,799 kg of seeds, 1,39,392 kg of seeds have been supplied.

Distribution of Breeder Seeds - 1998-99

(in kg)

Sl.No.	Crop	Indent	Distribution
1.	Paddy	36,885	41,456
2.	Millets	361	837
3.	Pulses	4,180	7,306
4.	Oilseeds	86,622	88,475
5.	Cotton	296	666
6.	Forage crops	260	332
7.	Vegetable crops	195	321
	Total	1,28,799	1,39,392


Pudia
Soundal
புதிய சவுண்டல்

பாசிப்பயறு கோ6

SUGARCANE
கரும்பு
கோக 99061

WATER TECHNOLOGY

Field experiments conducted at Bhavanisagar for four seasons (two plant crops & two ratoon crops) revealed that drip irrigation once in 2 days at 80%, 60% and 40% of surface irrigation produced comparable yields in both the plant crops. In both the ratoon crops, drip irrigation at 80% of surface irrigation once in 2 days recorded highest yields and was superior over all other treatments. Drip irrigation once in 2 days at 60% and 40% of surface irrigation recorded comparable yield in both the ratoon crops. Surface irrigation scheduled at 0.75 IW / CPW ratio recorded the lowest yield in all the four seasons. Application of nitrogen at 175 kg/ha through drip was found to be superior and economical. Hence in moderately water scarcity areas, drip irrigation once in 2 days at 80% and 60% of surface irrigation with 175 kg of N/ha through drip could be recommended to get higher yields with a water saving of 20% to 40%.

Technique for salt removal in irrigation pipes, the problem of salt encrustation mainly due to poor quality underground water is encountered by the farmers who condemn the (PVC / HDPE) pipes especially when compressor pumps are employed for lifting water and replacing them with new pipe lines incurring high expenditure. To alleviate this salt encrustation problem, a novel approach viz., 'Therm Tech' has been identified at WTC, TNAU. According to this approach the encrusted pipes are subjected to different temperature levels (70,80,90 and 100° C) of water and kept forhalf an hour. At the end of the period it was observed that at 70°C itself the PVC pipes released the deposited salt easily without any force. Addition of citric acid at 20:1 ratio (water : citric acid) improved the removal of salt even at still lower temperature. For this purpose a trough is to be fabricated with the dimension of 22' x 2' x 1' having two heating elements (each 2000W) to heat the water to 70°C which cost Rs.5000/-. The cost for the removal of salt from one foot PVC pipe works out to 25 paise (80 NP/m).

Surge irrigation studies conducted with sunflower CO 2 with soil amendment viz., Coirpith and FYM indicated that irrigation method did not influence the grain yield. But considering soil amendment, coconut coir waste application with extra of 25% NPK produced significantly higher yield (1,398 kg/ha) as compared to FYM treatment (1,339 kg/ha).

Surge irrigation and soil amendments studies conducted in maize CO 1 involving continuous flow, coconut fibre waste (12 t/h) applied with continuous flow, surge flow and coconut fibre waste (12 t/ha) applied with surge flow revealed that surge flow with amendment application consistently gave higher fields viz., 4,010 and 3,870 kg/ha in both monsoon and summer seasons and found superior over continuous flow methods as well as continuous flow with amendments.

Irrigation management under varying levels and methods of irrigation conducted with Jasmine revealed that irrigation at 1.00 IW/CPE ratio through ridges and furrows method recorded the highest flower yield of 3,436 kg/ha with a water use efficiency of 2.89 kg/ha/mm.

Scheduling irrigation to groundnut at IW/CPE 0.75 and adopting fertilizer schedule of 21.5 : 42.5 : 67.5 : kg NPK / ha coupled with raw coirpith application @ 12.5 t/ha is found to be promising for enhancing groundnut productivity and maintaining soil fertility.

Drip Irrigation in cotton trial was conducted with TCHB 213 cotton with paired row system. The pair to pair spacing is 140 cm and within the pair is 100 cm. The results indicated that drip irrigation once in 2 days at 75% of surface irrigation recorded highest kapas yield of 17.10 q/ha with a water saving of 55%.

A study conducted at farmer's field at Nallamanayakkanoatti village in Kallikudi watershed using locally available materials like coir pith @ 10t per ha, pressmud @5t per ha, FYM @ 10 t per and groundnut husk @ 5 t per ha for soil moisture conservation in groundnut VRI 2 under rained conditions revealed that application of FYM @ 10 t per ha recorded higher pod yield (1,173.8 / kg/ha) and haulm yield (963.5 kg/ha).

PLANT MOLECULAR BIOLOGY

Evolving transgenic rice lines : A rice chitinase gene, chi 11 (pBSG-11) obtained from IRRI, which was proved to be effective against the rice sheath blight was used for evolving new plasmid constructs with chi 11 cassettes. A plasmid, pJRB2 was constructed which harbours a selectable marker gene (hph) cassette, scorable marker gene (gus A) cassette and Chi 11 cassette in one frame. This plasmid could prove to be a standard chitinase construct in future for gene transfer experiments which aim at evolving transgenic lines of elite indica rice types popular in Tamil Nadu. With a view to developing a versatile Chi 11 construct which can be used both in the Biolistic (and other direct gene transfer) and Agrobacterium-mediated methods, another plasmid, named pJRB3(13.5kb) was constructed by cloning the 1.7 kb CaMV 35S-chi 110 - NOS cassette from pBSG -11 into the HindII site of pCAMBIA 1301, a highly evolved vector developed by CAMBIA, Canberra, Australia.

(i) **BPH** : To tag resistant gene for BPH (Biotype-4), the mapping population (RILs) developed from the cross IR 50/0. officials derived 9195 was used. Bulk segregant analysis with DNA markers viz., RAPD and Microsatellites revealed that one RAPD primer (AJ09) and two microsatellite markers (RM 18 and RM 168) were found polymorphic and further confirmed that they were 1.3 cm and 1.9 cm away from the resistance locus. The tightly linked RAPD marker has been converted to readily usable STS marker.

(ii) **Leaf folder** : Two RAPD markers that were identified as linked to a major gene of Leaf folder resistance were cloned and sequenced.

(iii) **Yellow Stemborer** : Bulk segregant analysis and F_2 progeny survey showed four RAPD markers that co-segregated with resistance ($OPCI_{320}$ and $OPK6_{740}$) and susceptibility ($OPC4_{1300}$ and $OPAH5_{680}$).

(iv) **Drought Resistance** : The land races Nootripathu and Norungan were found to have consistently desirable root system traits conferring drought tolerance in rice. These rice lines are being used as potential sources for identifying genes regulating root traits in rice. Nootripathu recorded better drought tolerance scores and full panicle emergence under stress. IR 72 showed relatively more panicle exertion and retention of green leaf area under stress than IR 20. The line IR 20 which lacked in deep rooting and high OA was drought - susceptible.

Evaluation of genotypes developed through Innovative breeding methods :

(i) The culture CB (DH) 95298 has been promoted to ART - 4/98-99 (110-125 days) based on the yield performance in MLT conducted during 1997-98.
(ii) Two DH line derived from IR 50/Oryza rufipogon viz., CB (DH) 95298 and CB(DH) 95299 already in the MLT, were to be stable in their yield performance over three seasons and were included in the AICRIP trails during Kharif'98 under AYT-IME group.

(iii) One more DH lines derived from IR 50 Oryza rufipogon viz.DH 18 which is already in MLT, was found to be consistent in its yield performance during 1998-99. It will be proposed to AICRIP trials to be conducted during Kharif'99.

Crop Production : a) The performance of acid tolerant Cynobacterial cultures viz., Anabaena -AT -5C_{10}, Nostoc -A-J5A_4, Oscillatoria - AT -5C_9, Westiellopsis-AT-4A_7, Westiellopsis-AT5A_9 on rice seedlings (ASD20) grown in acid soils was compared with normal soil culture Anabaena-NS-G 11. The cultures were applied either alone or composite inoculum. The seedling height, ammonia extraction, total chlorophyll and total nitrogen content of the seedlings were significantly increased by composite cultures. The composite cultures viz., Anabaena, Westiellopsis isolated from acid soils were tested for herbicide resistance . Among the cultures Westiellopsis was found to be resistant to both herbicides and acidity. Among the herbicides, butachlor was safer than any other herbicides by recording maximum growth and biochemical constituents upto 12 ppm concentration.
b) Among the 32 indigenous isolates of Bacillus thruringiensis tested for toxicity, seven isolates showed similar level of toxicity as that of the standard strain HD1 against rice leaf folder.

Crop Protection : a) In characterisation of rice BPH populations, populations from different environments of rice cultivation within Tamil Nadu and different states of India were collected. Different protocols for isolation of DNA were tried and CTAB method was found to be the best. RAPD analysis revealed genetic polymorphism between male and female BPH and also between branchypterous and macropterous females. Hence, the sampling procedure was standardised to collect only branchypterous females. Diversity analysis with different populations revealed that there were no significant differences among the populations of Tamil Nadu. However the Raipur (M.P)population differed significantly from others.

b) **Molecular Breeding for Insect Resistance** : The phenotyping of F2 population confirms the polygenic nature of inheritance of resistance in rice to Yellow Stemborer and Leaf-folder.

ii) Antibiosis mechanism is involved in imparting resistance for both Yellow stemborer and Leaf folder.

BIOCHEMISTRY

Insect specific alpha amylase inhibitor from ragi (*Eleusine coracana*) : Alpha amylase inhibitor was extracted from the seeds of ragi (CO 11) (*Eleusine coracana*) using 50 ml sulphuric acid and assayed against rice weevil (*Sitophilus oryzae*). The crude extract was subjected to ammonium sulphate fractionation (0-40, 40-80&80-100). The precipitate obtained between 40-80% saturation was further purified by column chromatography on Sephadex G50, CM cellulose and RPHPLC. The molecular weight of the inhibitor protein was found to be 14 kDa.

The inhibitor protein from ragi CO 11 has no reaction with pancryotic amylase, human salivary amylase and trypsin.

AGRICULTURAL AND RURAL DEVELOPMENT

Probit regression analysis was employed to determine the factors influencing the awareness of farmers about regulated markets. The results indicated that the educational status of the farmers found to be an important factor that influence farmers awareness about regulated markets and also it was significant at one percent level. Similarly publicity and propaganda activities were found to be significant at five percent level. The results clearly stated that efforts should be taken by the officials to disseminate the benefits of regulated markets. The publicity and propaganda wing could be strengthened to evenly reach the villages. The distance from farm to regulated market also create some problem on awareness. Hence it was concluded that to create awareness, marketing officials could visit villages regularly.

A study was conducted to find the feasibility of installing processing units in the premises of the regulated market of Erode District. Sixty farmer-sellers and 30 traders were selected from the six identified regulated markets having the potentials for installing the processing units.

Five Commodities viz., turmeric, gingelly, cotton, groundnut and coconut were identified as the potential commodities for processing in the premises of the regulated markets. Farmers marketed groundnut with pods ; gingelly without cleaning and turmeric as polished product.

Processing units identified for installation in the regulated markets were :

Groundnut decorticator	- Adhiyur and Punjai Puliampatti Regulated Markets
Turmeric polisher	- Erode Regulated Market
Gingelly siever	- Sivagiri Regulated Market
Cotton ginning unit	- Andhiyur regulated Market
Cotton Drier	- Aval Poondurai Regulated Market

All the above processing units were found economically, technically, financially and managerially feasible.

A study was conducted at Velayudhampalayam of Karur District to find the prospects and problems of Betelvine cultivation . 52.00 per cent of the growers were found to have medium to high level of awareness on the recommended Betelvine cultivation technologies followed by low level awareness (48.00 per cent). 58.00 per cent of the betelvine growers were found to have low level of adoption followed by medium level (23.00 per cent) and high level (19.00 per cent) of recommended Betelvine cultivation technologies.

A high percentage (83.00 per cent) of the growers have sold the betelvine at the Betelvine Growers Association i.e., Sangam followed by Merchants (48.00 per cent), sale at production place itself (17.00 per cent) and Shandies (8.00 per cent). No one was found to sell the betelvine at to consumers directly at specific places during specific days.

Varietal susceptibility to pests and diseases (84.00 per cent), soil and water problems (76.00 per cent), high cost of fertilizers (56%) and high cost of pesticides (54.00 per cent) were the major constraints expressed by the farmers.

A study was conducted at Musiri block of Tiruchirappalli District to analyse the problems and prospects of Korai cultivation.. The study revealed the constraints faced by the farmers in Korai cultivation. The major production constraints faced by the farmers in Korai cultivation were :

a. Rain during harvest (96.00 per cent)
b. Loss in quality of Korai due to water stagnation for a long period (80.00 per cent).
c. Yield loss due to weed problem (64.00 percent)
d. Mixing of inferior quality tubers while planting (58.00 per cent)
e. Water stagnation during planting time (54.00 per cent)

The major constraints relating to marketing of Korai were :

a. Delayed harvest by Contractors (94.00 per cent).
b. Price fixation by Contractors (92.00 per cent).
c. No fixed price (86.00 per cent).
d. Delayed payment by Contractors (78.00 per cent).
e. Harvest by individual farmers was not possible due to contract labouerers (38.00 per cent).

AGRICULTURAL EXTENSION

A study to assess the level of participation of rural women in IRDP in Madurai district revealed that majority of the respondents were aware of village level development works and had low awareness about the higher level developments works. Rural women actively participated in the economic development programmes in the organisation phase with high level of participation but it was medium in supervision and low participation in planning the programme activities.

A study on Changes in rural social structure and functions and their impact on farming was conducted in selected four villages of Kinthukkadavu block of Coimbatore District. The study revealed that changes of varying degress had occurred in all structural aspects, more specifically, in nature of family, occupational status, migratory pattern, credit orientation, material possession and operational holding. In the case of functional aspects, the changes were significant on exchange of inputs, decision-making pattern, family expenditure pattern, farm expenditure pattern, acquisition of assets and mass media utilisation. Considerable improvements in various infrastructural facilities like increase in fertilizer, pesticides shops, energising the irrigation wells and establishment of credit facilities were worth mentioning. The structural and functional aspects had led to many consequences relating to farming and they were felt at higher level in the case of types of inputs used and adoption of farm technologies. The study suggested that suitable integrated farming system has to be recommended for augmenting farm income besides better resource base. As wage rise of rural labour was illusionary as compared to wages of urban non-farm labourers, target group oriented welfare schemes have to be intensified in the rural areas so as to boost their income and to prevent migration. Reduction in cattle population was noticed inspite of animal health service facilities. Hence, suitable government schemes have to be implemented to increase the animal population to increase the off-farm income. As urban influence on land value is inevitable, conducive environment to continue the farming has to be created by *way of augmenting irrigation potential, assessing remunerative prices for agricultural* produce and favourable marketing system.

An experimental study on the comparative field experiments on effectiveness and economic efficiency of selected extension training methods was conducted in seven selected villages of Perundurai taluk in Erode District. Viedo show, slide show, method demonstrations, video plus slide show, video plus method demonstrations and slide show plus method demonstrations were tested for their effectiveness. Enriched farm yard manure was taken as the skill practice. All the treatments applied increased both the knowledge related to skill practice and skill of the subjects to a significant extent. The descending order of effectiveness was video + slide show + method demonstrations, slide show + method demonstrations ; video + slide show ; method demonstrations ; video+ method demonstrations; video and slide show. The cost per farmer involved in video teaching was estimated to be Rs 13.21, while it was Rs 7.72 for slide show and Rs.27.72 for method demonstrations. The Unit cost estimated for methods on knowledge gain was as under : Slide show Rs.0.70; video Rs.1.12 ; method demonstrations Rs2.18 ; video + slide show Rs.1.60 ; slide show + method demonstrations Rs.2.60 and video + method demonstrations Rs.0.58 ; video Rs.0.95 ; method demonstrations Rs.1.58, video Rs.0.95 slide show + method demonstrations Rs.1.89 and video + method demonstrations Rs.2.29.

A study on "Analysis of pesticide and plant protection equipments use behaviour of rice farmers " was undertaken in selected villages of Erode and Coimbatore Districts. The respondents have consulted extension workers and pesticide dealers for selecting the chemicals. Contract spraymen were consulted to decide the spray fluid required and other pest control activities,. Majority of farmers purchased the required chemicals just a day in advance and on the day of use from

the local shops. All the farmers were aware about the precautionary measures like spraying along with the windward direction but unaware of lethal values, recommended first aid measures and safe disposal of containers. Nearly three fourth depended on contract spraymen. Few were found to lease in plant protection equipments from Governments depots and farmer owners.

A study was conducted to assess the training needs of extension functionaries of State Department of Horticulture. The sample size was 49 horticultural extension functionaries which included nine Assistant Directors of Horticulture and 40 Horticultural Officers of Tamil Nadu State. The salient findings are as follows : Other land based enterprises was the most preferred subject area of training by 40.81% of the respondents followed by horticulture subject (34.70%) and extension education (24.49%). Under Horticulture, training on integrated farming system was preferred by 22.44 per cent of the respondents, followed by 'knowledge and skill on plant protection techniques' (18.37%), knowledge and skill about soil and water management ;(16.32%), 'knowledge and skill about financial assistance (14.29%), 'knowledge and skill about harvesting, storage and marketing' (12.25%), 'knowledge and skill about seed and planting material ' (10.21%), and lastly about 'knowledge and skill about application of manures and fertilizers (6.12%). Under extension education, the subject matter,'training' was preferred by 20.41 per cent of respondents, followed by 'demonstration' (18.37%), 'communication', (16.33%), 'planning' (14.29%), and 'organising'(12.24%). As far as the method of training was concerned, experiential learning and demonstrations were the most preferred methods by the horticultural extension functionaries.

HORTICULTURE

POMOLOGY

Pomegranate : Among the 61 germplasm accessions, the variety Yercaud -1 recorded the highest number of fruits per plant (20.33). The fruits of six F1 hybrids were analysed for their qualities. The fruit weight was the highest in the cross Ganesh x Bedana Bosco (160 g). The 100 aril weight was maximum (19g) in the cross Ganesh x jyothi with an attractive dark pink aril colour. The seeds are soft in the cross Jyothi x Ganesh with T.S.S.of 11° Brix.

To improve the yield and quality of Pomegranate, application of Dolomite 945 g/time/tree during January and July along with 600:300:600g N, P_2O_5 and K_2O in two equal split doses during March and September increased the yield (13.08 kg/tree) and fruit quality parameters like T.S.S.(13.54%) and ascorbic acid content (14.92 mg/100 ml of juice)

Spraying of 1.0% KCl solution from bud stage to harvest of fruits at an interval of 15 days has recorded the highest fruit yield of 13.25, 9.36 and 6.82 kg/tree in Yercaud-1, Ganesh and Jyothi respectively.

Papaya : The performance of the papaya varieties viz., CO 2, CO 3, 9-1(D) and a local selection from Mecheri was evaluated and among the four cultivars evaluated, 9-1 (D) recorded the highest yield of 97.72 kg/tree followed by CO.2(71.98 kg/tree).

Timla fig : Four new pathogens associated with the rotting of fig fruits in the field and storage were recorded and pathogenicity was proved. The pathogens are : 1 *Botrytis cinerea* 2.*Sclerotium rolfsii* 3.*Cladosporium* spp. 4.*Rhizopus stolonifer*. Among the four, the grey mould *Bitrytis cinerea* and *Sclerotium rolfsii* were reported for the first time in India and elsewhere.

Hill banana : Application of bio fertilizers viz., 3g of azospirillum, 3g of phosphobacterium and 5g of VAM along with 50, 75 and 100% recommended dose of nitrogen and phosphorus were tried in hill banana. The bio-metric charcters viz., pseudostem height, number of leaves, leaf length, leaf breadth and no.of suckers were found to be increased by the application of bio fertilizers along with 75% recommended dose of N & P.

Avocado : For standardization of vegetative propagation five methods were tried and among the methods, the maximum level of success (90%) was recorded in soft wood grafting method.

Mandarian Orange : Jatropha oil 3% was superior in controlling aphids compared to other treatments. The mortality observed was 90%. This treatment was on par with *neem oil 3% in checking black flies. The next best treatments were pungam oil 3%* and jatropha leaf extract.

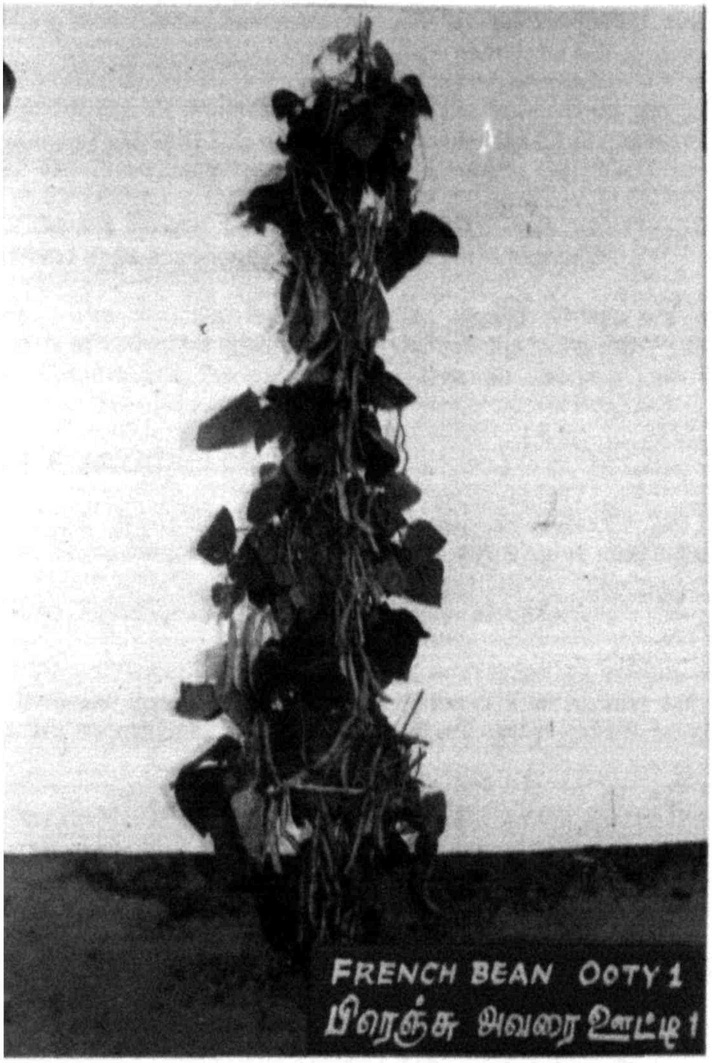
OLERICULTURE

Sweet Potato (CO CIP 1) : This is a high yielding, short duration (95-100 days) variety, suitable for September -October, February-March and June -July sowings. This variety is tolerant to weevil and has better market appeal. The average yield is 31.76 t/ha which is 25.7% increase over CO 3. This variety is recommended for entire Tamil Nadu.

French bean (Poletype) Ooty-1 : This is a pure line selection from accession PV-26 with duration of 80 days. This is a only pole type variety proposed for release for temperate zone, from 1800 to 2500 Msl. It is moderately resistant to leaf spot, anthracnose and pod borer. The protein content is 17.15% and average yield is 33.68 t/ha. superior by 52.7% over local and 40.5% over KKL-1.

Pumpkin : The selection has resulted in identification of three promising lines CM.1, CM.2 and CM.3. CM.2 recorded the highest yield of 31.48 t/ha and is being advance to MLT / ART.

Onion : A study conducted to find out a suitable control measures for thrips and purple blotch disease of onion revealed that dimethoate + mancozeb, dimethoate + carbendazim and NSKE 5% were highly effective for the control of thrips.With respect to the control of leaf spot disease or purple blotch disease, copper oxy chloride, carbendazim, tridemorph, methyl demetan + mancozeb and dimethoate + tridemorph were highly effective


FRENCH BEAN OOTY 1
பிரெஞ்சு அவரை ஊட்டி 1

Brinjal : Culture CBH.1 with earliness records a fruit yield is 69.74 t/ha.

Chow- Chow : Among ten ecotypes, the Thadiyankudisai type gave the highest fruit yield of 41 kg/vine with 107.6 fruits per vine.

FLORICULTURE

Orchids : Among the twelve important orchid species, Dendrobium, Spathoglottis, Paphiopedilum and Cymbidium were found to perform well under Yercaud conditions.

Gerbera : Among the 12 promising accessions, the flower yield per clump per year was the highest in GJ.45 (92.2), closely followed by GJ.23 (87.2) and the lowest in GJ.41(46.0). The flower stalk length was the highest in GJ.23(48.9 cm).The flower diameter was the highest in GJ.23(9.5 cm) and the lowest was in GJ.49(5.9 cm). The vase life of flowers ranged from 4.0(GJ.17) to 8.5 days (GJ.23). The accession GJ.23 was found to be superior based on overall performance.

Crossandra : The fertilizer requirement for triploid Crossandra cv.Delhi has indicated that N at 120 kg/ha applied over in two months along with P_2O_5 at 15 kg/ha and K_2O at 70 kg/ha gave the highest yield (13 tonnes / ha year) with better colour intensity.

SPICES AND PLANTATION CROPS

Fenugreek- CO.2 : It is selection from germ plasm collection CF 390 having 85-90 days duration. The average yield of this variety is 481.8 kg/ha and superior over CO 1 by 21.3%. This variety is recommended for Coimbatore, Dharmapuri, Cuddalore, Ramnad, Trichy, Perambalur, Karur and Tirunelveli districts.

Pepper : In the multilocational trial of pepper, among the 14 entries, the accession Panniyur-3 recorded the highest green berry yield of 1.50 kg/vine with 6.8 spikes / m^2. Among the accessions, Sreekara is observed for its bolder berries (9.2g/100 berries).

For the control of pepper wilt disease with bio control agents, soil application of Trichoderma viride at 20g/ vine was highly effective (100 per cent) in controlling quick wilt disease. The next best treatment was boardeaux mixture (1% soil drenching).

Cinnamon : In the MLT of cinnamon, among the five accessions, Sel.203 recorded the highest bark recovery of 48 per cent. The type Sel.44 recorded the highest leaf oil content (4.1 per cent) and Sel.189 has recorded higher bark oil (4.0 per cent). The Sel.53 and Sel.63 have recorded higher bark oleoresin (16.0 per cent).

In the control of coffee borer (Zenzera coffea) affecting cinnamon trees, injecting endosulfan 35 EC (0.07%), dimethoate 30 EC (0.05%), DDVP 86 WSC (0.05%) into the fresh bore hole and plugging the hole with cotton wool were found to

give 100 per cent control. Confirmatory trails and safe waiting period for the above insecticides are in progress.

Clove : Among the 13 lines of clove maintained at Yercaud, the Courtallam type performed well at Yercaud condition. In the multilocational trial, of the six entries, Sel.1 recorded the highest plant height of 170 cm with 32 branches / plant. This accession produced seven buds/cluster.

In the drip irrigation trial in clove to study the optimal rate of drip irrigation under Shevroy hill conditions, dripping of 8 liters of water per day during dry season was found to be ideal for growth and development of clove.

Application of 100 kg FYM, 400:300:1200 g of NPK /plant and 50 g in each of Azospirillum and Phosphobacteria recorded the highest green bud yield (4.0 kg/tree).

Nutmeg : Application of 100 kg FYM, 400:300:1200 g of NPK /plant and 50g in each of Azospirillum and Phosphobacteria resulted in increased fruit yield (556 fruits / tree.)

Ginger : Out of the three varieties viz., Suprabha, Surchi and Suravi and two ecotypes viz., Pannaikadu and Thandigudi, fresh rhizome weight per plant was the highest in suruchi variety (485 g) and the same variety scored highest yield per ha. agaianst Thandigudi (control).

MEDICINAL PLANTS

Tippli (Piper longum) : Eleven accessions were maintained. A single plant selection viz., PL.9-15 from the population of PI.9 was found to be highly prolific. The increase in the dry spike yield of PI.9-15 over the check variety was 49.88 per cent and 31.51 per cent over the corresponding parent (PL.9).

MUSHROOM

Button mushroom - Ooty 1: It is collection from local forests and isolated with 90 days duration. It is suitable for hill areas from March-October. The buttons are pure white, round and 5.7 cm. in diameter. It withstands storage upto 5 days under room temperature and 10 days under refrigeration condition. It contains 7.49% crude fat, 11.55% crude protein and 11.00% crude fibre. The average yield is 1.376kg .of button/10 kg substrate and is recommended for The Nilgiris district.

HOME SCIENCE

Maize cake : Maize popularly known as "India corn" is a good source of carbohydrates, lipids and β-Carotene. An attempt has been made to prepare maize cake by substituting maize flour for maida at 10,20 and 30 percent levels. The physical parameters such as weight, volume, bulk density, crust and crums appearances were compared with control (100% maida). As the level of substitution of maize flour increases, the bulk density and colour of the cake were proportionately

FENU GREEK CO 2
வெந்தயம் கோ 2

increased, whereas volume had decreased. The texture of the finished product varied from soft to hard nature. Among the three levels of substitution, 20 percent had recorded highest score values in the sensory evaluation followed by 10 and 30 percent when compared with control. To enrich the β-carotene content of cake, 20 percent substitution of maize flour can be adopted for commercial production.

Soya based ready to use Chutney Mix : Soya dhal (60gms), coconut scrapings (8 gms), red chillies (4 gms), and tamarind (3 gms) were fried separately and ground to powder using mixie. Salt (2gms) was mixed with the powder. The powder was seasoned using gingelly oil (5ml), mustard (2gms) and curry leaves (1 gm). Soya based ready to use chutney mix was a highly acceptable and found to have more energy, protein, fibre, calcium, iron and phosphorus than that of the control.

Soya based ready mixes : Traditionally used bangalgram and blackgram dhals were replaced fully by soya dhal for the preparation of ready mixes, idli podi, gingelly podi, paruppu podi, sambar podi, rasam podi and curry masala podi and their acceptability were studied. Soya based ready mixes were highly acceptable, nutritious and costless when compared to ready mixes prepared traditionally.

FOOD SCIENCE & NUTRITION

Development and Quality Evaluation of Soya : Avacoda Fruit Weaning foods : The objectives of this study was to develop a malted weaning food based on wheat and rice with soy-avacoda fruit of high acceptability suitable for 6-24 months - Children and to evaluate the product for protein quality albino rats. Five combinations of wearing food based on cereals (Wheat malted, rice flour steamed) with soya (Malted) and avocoda (whole fruit) blended with milk powder and jaggery were developed. Among the foods developed, the combination of soya-avacoda at 30 and 20 percent level was the best. Hundred gram of these foods provide 353+15 calories and 18+1% protein. The values of protein efficiency ratio (PER) were 2.25 and 2.53.

Processing of soya curd and its utilisation : A study was undertaken to process 'curd' from soya milk. Soya milk was boiled, cooled and the starter culture Lactobacillus plantarum was added and kept at room temperature of 45°C for 12 hours. The acidity, pH, total soluable soilds (TSS) reducing and total sugar were calculated. Using the soya curd, the recipies like curd aviyal, curd ashgourd salad and curd curry were prepared and their organoleptic evaluation done by panel of judges using a score card with 9-1 rating scale. All the three products "curd aviayal", "curd ashgourd salad" and "curry curry" were ranked high for the quality characteristics like colour, appearance, flavour, texture, consistency and taste.

Ready to use paneer mix using soya milk : Soyabean is rich in protein and efforts are made to incorporate soya in the dairy foods used in the form of milk. An attempt was made to incorporate soyamilk with cow's milk 20,40 and 60 percent levels for preparing paneer. Paneer was prepared by coagulating milk using lime juice. The coagulated product was drained free of whey, pressed, cut into cubes, fried, boiled with tomatoes, onions, salt and spices, dehydrated and packed to arrived caking phenomenon. The samples of paneer curry when rated with 9-1 hedonic scale score

card were found to be good among the three samples, 20 percent incorporation was the best. The beany flovour of soyabean was not evident in all the paneer mix. The shelf life at room and refrigerated temperatures were found to be more than 60 days.

Preservation of idli-a South Indian Fermented Product : The shelf life of Idli is generally 48 hours. This study was carriedout to increase the shelf life. Preparation of Idli involves mixing Of 4 parts of ricebatter and 1 part of blackgraam ground puree and salt. In this study, idlis were prepared bypacking them in ploypropylene pouches with and without vacuum. Vacuum packing preserves idli as the air around the product is removed and so microbial deterioration is reduced. Vacuum packed idlis had a good shelf life. The same investigation was done on stuffed idlis also.The plain and stuffed idlis which were ordinary packed and vacuum packed were kept at room temperature, refrigerator temperature and freezer temperature and their acceptability was recorded. The organoleptic evaluation was rated with 4-1 hedonic scale and the score was found to be good. The best preservation technique was vacuum packed idlis which were kept at low temperature of -5 to 4° C.

FORESTRY

Superior provenance of Eucalyptus tereticornis : Studies conducted with fourteen provenances of E.tereticornis seeds received from IUFRO Australia by recording survival and dbh 8 years after indicated that based on both survival and growth are equally vital considerations a holistic estimation. Based on the yardstick of suitability index, three provenances Laura, Mt Garbine and Kennedy River were found as the most promising.

Ideal host plant for sandal : Sandal (Santalum album) is a partial rhizogen. To identify the ideal host species in the early stages, 30 day old sandal seedlings were transplanted with nine different host species and the host plants were pruned periodically once in 30 days. Based on the observation on shoot growth made at 60 days, intervals, barring Eucalyptus tereticornis and Leucaena leucocephala all other host species maximised the shoot growth of sandal recorded 360 days after transplanting. The increase followed by Albizza saman with a corresponding increase of 96.0 per cent only.

Improving seed germination in Pongamia pinnata by vertical sowing : Among the five different methods of sowing, the vertical sowing with the micropyle directed downwards gave the highest germination of 92%. Vertical sowing with the micropyle oriented laterally or upwards recorded germinability of 58% and 66% respectively. Sowing seeds flat gave a germination of 72% indicating that micropyle orientation is more important than disposition of seed vertically or flat.

Effect of time of fruit collection on seed viability and vigour in *Alianthus excelsa* : Mature fruits were collected 11, 12 and 13 weeks after flowering. At each collection ,10 samples of 25 fruits each were made and after record of fresh weight germinated on blotter paper. Twenty one days after sowing, viability and vigour parameters were recorded. Fruits collected 12 weeks after flowering has the highest values for fruit weight, percentage of germination, seedling dry weight and vigour index.

Effect of presowing chemical treatment on germination and seedling growth in *Acacia nilotica* : Seeds of *Acacia nilotica* collected from a nine year old woodlot were treated with potassium chloride, potassium dihydrogen phosphate, potassium nitrate and diaammonium phosphate and cowdung, each at two concentrations for a duration of 24 hours. Compared to water soaking, soaking in 2.0% KNO_3 gave significantly higher percentage of germination and biomass.

Effect of presowing treatment on growth attributes of *Albizzia lebbech* (L.) : Benth : IAA and Riboflavin each at 100 ppm and 200 ppm concentrations were tried on seed germination and seedling growth. The soaking duration was 24 hours, the water soaked seeds served as control. The results showed that the 100 ppm Indole acetic acid (IAA) recorded higher percentage of germination (81.00%), root length (45.20 cm), shoot length (9.40 cm), vigour index (4422.60), root weight (1.148 g) and shoot weight (0.731 g) when compared to water soaking and other treatments.

Maximising germination in *Alianthus excelsa* : The fruits of *A.excelsa* are samaras with a hard pericarp and therefore germination is invariably poor. Nicking the seeds at either end and soaking in 2.5% KNO_3 solution for 72 hours helped in enchancing germination to 64% compared to 20% in control. Besides KNO_3, the chemicals evaluated were cytozyme, mixtalol and calcium oxychloride each at four concentrations of 0.5,1.0,1.5 and 2.0 %.

Effect of seed coat colour on viability and vigour in soapnut : Seedlots of soapnut exhibit polymorphism in colour of the testa which ranges from light brown to dark. The seedlot in soapnut was resolved into the three colour and each evaluated for viability and vigour parameters. Compared to bulk, the dark coloured seeds registered an increase and the light coloured registered a decline, the brown coloured ones were on a par with the bulk. Vigour in terms of root length was also the highest in the dark coloured seed. It is therefore recommended that for seedling production in Sapindus emarginatus seeds be graded based on seed coat colour and only dark coloured seeds used.

Variation in azadirachtin content in neem : Azadirachtin content in Indian provenances of neem is generally low (0.2-0.75 g kg^{-1}) is compared of African provenances (1.0-3.5 g kg^{-1}). But an analysis of 32 phenotypically superior trees from as many locations in Tamil Nadu revealed large variation from 0.29 to 8.83 g kg^{-1} seeds. This suggests the large scope for selecting phenotypes endowed with high azadirachtin content. However, no correlation between oil and azadirachtin content was evident.

SERICULTURE

Survey conducted in Dharmapuri, Salem, Erode and Coimbatore revealed the incidence of leaf webber, *Glyphodes* sp. ranged from 50-100% during December.

Survey made in Dharmapuri, Salem, Erode and Coimbatore indicated the incidence of spiraling whitefly from 10-65,5-45 and 15 per cent, respectively in mulberry leaves during October -December.

In the bioassay study with of *B.mori*,V1 has recorded the highest ERR of 82.93 per cent followed by DD (78.6%) and MR 2 (69.3%) as against 64.3 per cent in local.

Adult Dermestes atar beetle causes damage to silken cocoons more in top layers of gunny bags compared to grubs that are more in bottom layers. Seven beetles can damage one gravid moth within 12 hr. One beetle consumed 40 eggs within 12 h.

Fish meal trap and sticky cum light trap attracted dermestid adult beetles. The bait has to be changed once in every 4 days compared to 11 days in sticky trap.

Induced mutagenesis by gamma irradiation at 0.75 Kr in silkworm, *B.mori* race viz., Tamil Nadu White and Hosa Mysore favoured the following economic characters.

Characters	TN White	Hosa Mysore
Hatching percentage	9.47	8.95
Larvel weight (%)	15.23	1.62
Cocoon Yield (kg / 100 dfl)	52.96	30.47
Effective Rate of Rearing (ERR) (%)	62.84	23.00
Decreased larval duration	5.90	7.36

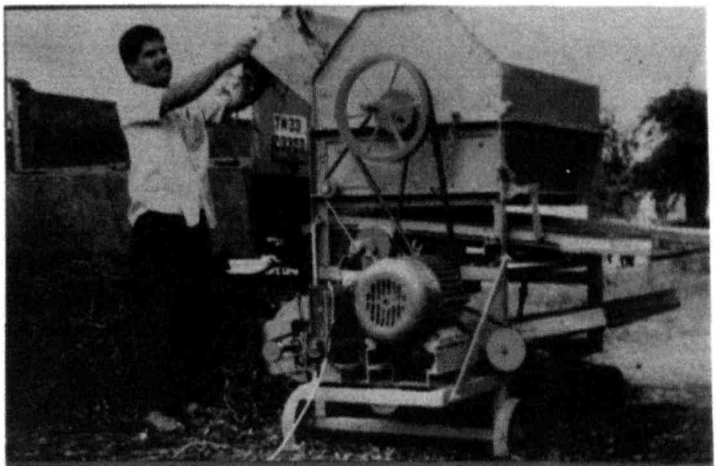
In CC_1 race gamma irradiation at 0.5 Kr favourably improved the following economic factors.

Characters	Percentage
Fecundity	42.36
Larval Weight	12.10
Single Cocoon Weight	20.52
Shell Weight	26.93
Shell Ratio	17.49
Denier	2.54
Decreased larval duration	4.15

AGRICULTURAL ENGINEERING

Groundnut Thrasher : This machine is used for thrashing fresly harvested groundnut crop. The thrasher is of axial flow type and consists of feed hopper. spike-tooth cylinder, concave, oscillating sieves and blower. It is operated by a 5 hp electric motor or by the PTO of the tractor. The overall dimensions of the machine is 1850 x 1600 x 1725 mm and weighs 350 kg. The capacity of the unit is 200 kg pods/hour and the cost of operation is Rs.22 per quintal. The cost of the unit is Rs.30,000/- (with motor). Four labourers are required for threshing. It saves 60% cost and 80% time.

Groundnut Harvester : This machine is used for harvesting groundnut crop from the field. The groundnut harvester consists of a soil loosening tool, a pick up, conveying machanism and gatherer windrower. It is operated by a 35 hp tractor. The field capacity of the machine is 2.0 ha/day. The cost of operation is Rs.600/ha and labour

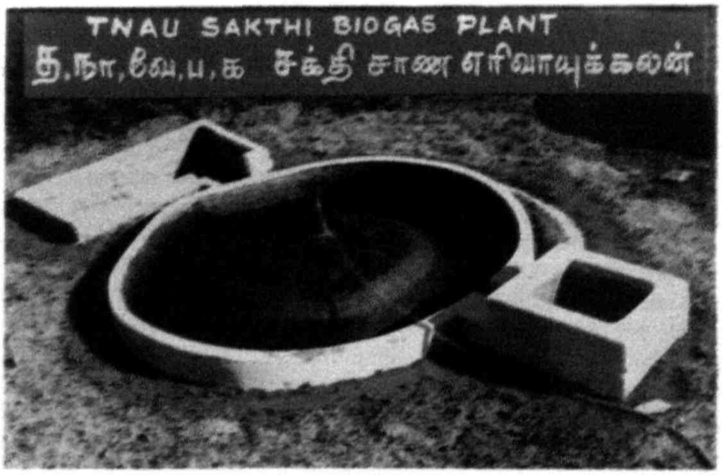


GROUNDNUT THRESHER
நிலக்கடலை பிரித்தெடுக்கும் இயந்திரம்

RIDGER SEEDER FOR COTTON
உழுது சால் அமைத்து பருத்தி விதைக்கும் கருவி

பவர் டில்லருடன் இணைத்து
அதிக நீர் இறைக்கும் பம்பு
DIRECT DRIVEN AXIAL FLOW PUMP

GROUNDNUT HARVESTER
நிலக்கடலை அறுவடை செய்யும் கருவி


TNAU SAKTHI BIOGAS PLANT
த.நா.வே.ப.க சக்தி சாண எரிவாயுக்கலன்

required is one operator and one labour with a saving in labour cost and time of 32 and 96 per cent respectively. The harvesting efficiency of the machine is 99 per cent .The cost of the unit is Rs.20,000/-.

Fodder Sorghum Harvester : It is used for cutting and winnowing the fodder sorghum and similar tall crops. It is manually walking behind type and is powered by 5 diesel engine. it weighs 75 kgs with an overall dimension of 2600 x 1200 x 1300 mm. The capacity of the machine is 1.5 ha/day. One operator and two labourers are required to collect and bundle the crop. The cost of operation is Rs.450/ha as against Rs.800/ha. by conventional method. Thus there is a saving of 45% cost and 85% time. The cost of the unit is Rs.45000/- (with engine).

Power tiller operated direct driven axial flow pump : The unit is useful for pumping huge quantities of water (3500 -4000 lit / minute) for irrigation / drainage. The pump is useful for canal and river water pump. The power source is 8 to 10hp power tiller and the cost of pumping is Rs.81 per hour. The mean discharge of the pump is 3000 litre/ min. against a total head of 3m. The cost of the Unit is Rs.7,000/-

Ridger seeder for cotton : The ridger seeder for cotton was designed and developed as a rear mounted attachment to four wheel tractor of 35 to 45 hp range, commonly available with farmers. The developed unit consists of a tilling mechanism, a ridge forming mechanism and a planter to perform ploughing, formation of ridges and furrows and planting on one side of the ridges in one pass. To suit different varieties of cotton, provisions are made for altering the row spacing, plant spacing and depth of seed placement. The field capacity is 3.5 to 4.0 ha/day with a field efficiency of 71 per cent. The cost of Operation is Rs.300/ha. It saves 24% cost and 90% time when compared with conventional methods. The cost of the unit is Rs.22,500/-.

Tractor Drawn Trencher : A tractor drawn trencher suitable for 35-45 hp tractor was designed and developed for opening a rectangular trench of 300 x 300 mm. The design and development of tractor drawn trencher and its components were carried out to optimise the trenching parameters. The trencher is useful for making openings for laying drip irrigation pipelines in the field. The cost of trencher is Rs.16,000. The capacity of coverage is 20 to 25 K.M. length of trench per hour. The cost required for mechine trenching were Rs.0.10 per metre run when compared to Rs.2.00 per meter run by using manual labour. The cost, time and energy saved by machine trenching in comparison to manual trenching were 95,99 and 53 percent respectively.

Stirrer machanism for starch setting tanks of Tapioca : Starch settling is one of the important processes in starch and sago industries. In almost all the Tapioca processing units in Tamil Nadu, setting of starch is being done using 3 or 4 labourers continuously trampling in the tank for about 8 to 10 hours, thus making the process labour intensive and most unhygienic. A machanical stirrer was developed and fabricated at Department of Agricultural Processing to make the process hygienic and obtain good quality starch by eliminating the trampling method using labourers. Stirrer consists of agitating paddles driven by 1.25 hp motor. The operational cost is Rs.80/- per batch and Rs.46/- percent savings in cost.

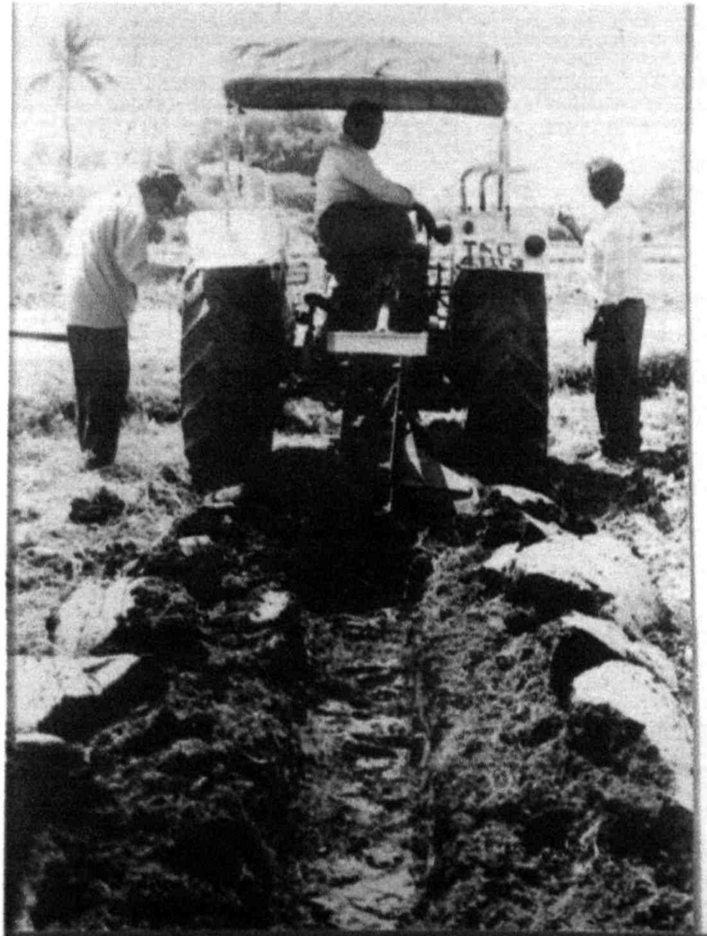
TNAU Sakthi biogas plant : The Bio-gas plant has been evolved to produce Bio-gas from animal dung. It is spherical shape with 2 cubic meter capacity. The plant is made of brick, sand and gravel. The construction cost is Rs.6,000/-. It is 40 to 50% cheaper than KVK model, 30% cheaper than Janatha model and 20% cheaper than Deenabandu model. It occupies less space for effluent.

TNAU Noon meal chulla : It is designed for cooking food in noon meal centres and community cooking for 100-200 persons. It is double pot chulha. Two air inlets are provided on the sides of the fire box mouth for better combustion. It has high thermal efficiency of 22.6% over 15% for traditional chulha with less smoke and reduced pollution and complete combustion. The fuel saving is 16.2% . The cost is Rs.115 for chulha alone and Rs.370/- including installation.

Pulper cum washer for coffee : This has been designed and fabricated. The unit consists of a tapezoidal hopper with fluted roller for uniform feeding, drum type pulper and a washer. In the pulper two breast plates are fixed and an inlet for water is provided at the centre. After pulping, skin is separated and parchments is allowed to go into the washer. The washer rotates at 320 rpm and the abrasive force developed in between the beans due to rotation of the drum removes the mucilage through the perforated cylinder. The hopper, pulper, washer and motor are mounted on a suitable frame over four anti-vibration mounts. By this arrangement, the unit can be placed at any levelled surface and operated and no foundation or concrete floor is required. The hopper and pulper can easily be separated from the washer and transported from one place to another in the hills for operation. Provisions are made, to operate the unit with an oil engine/power tiller/ power take off pulley of tractor where there is no electricity. The pulper is arranged in such a way that 90% of water used for pulping is collected and reused for washing. The capacity of the unit is 500 kg of fruit per hour. It requires only four liters of water per kg of fruits against 15 litres in the conventional process. The washed parchments contain only 4-5 per cent naked beans and is comparable with the existing units and the washing efficiency is 96%. The cost of the unit is Rs.50,000/-.

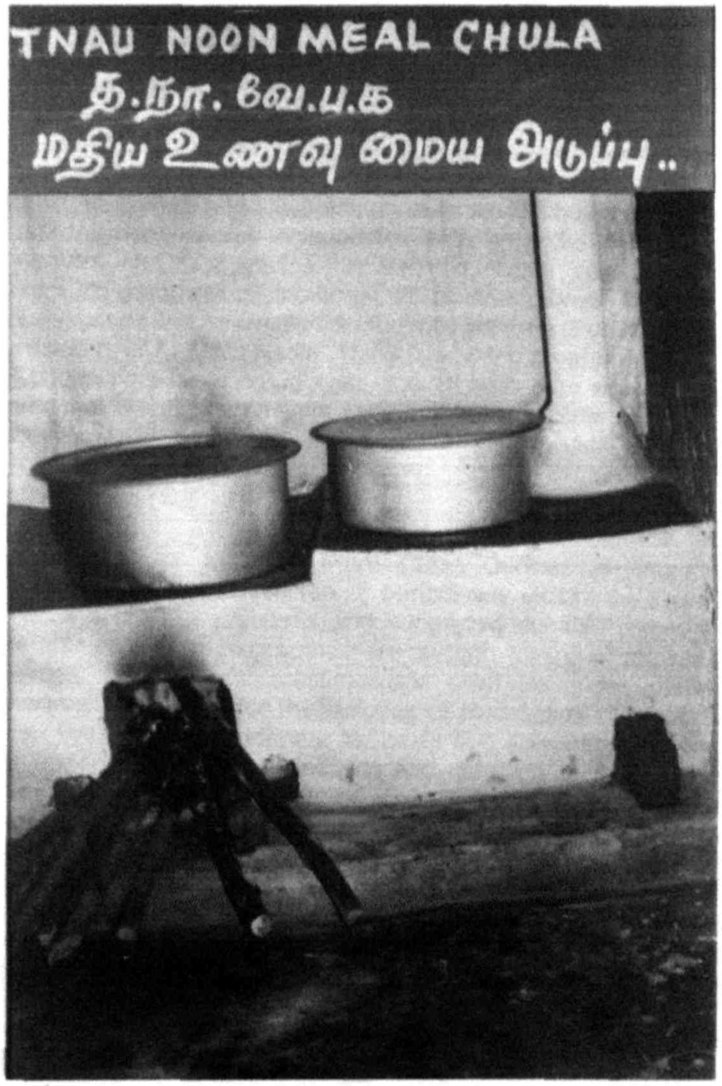
FODDER SORGHUM HARVESTER
தீவனச் சோளம் அறுவடை இயந்திரம்

Strirrer For Starch Settling Tanks of Tapioca
மரவள்ளிக் கிழங்கு மாவு படிய வைக்கும் கருவி



TRACTOR DRAWN TRENCHER

வடிகால் வாய்க்கால் தோண்டும் கருவி


TNAU NOON MEAL CHULA
த.நா.வே.ப.க
மதிய உணவு மைய அடுப்பு..

5. EXTENSION EDUCATION

The Directorate of Extension Education and the various Extension Education Centres of the Tamil Nadu Agricultural University are engaged in the transfer of technology emerging from the research programmes of the University. The details regarding the extension education activities of the Directorate of Extension Education are furnished below :

KRISHI VIGYAN KENDRA

The five Krishi Vigyan Kendras at Coimbatore, Madurai, Sirugamani, Vridhachalam and Sandhiyur conducted on-campus and off-campus training programmes on agriculture and allied activities. In all 454 training programmes were conducted and the beneficiaries included 9,479 farmers, 3,198 farm women, 5,051 extension workers and 622 youths. In addition, these centres carried out 92 demonstrations, 76 group/village meetings, 26 farm/field days, 8 farmers days, 947 farm advisory services and answered 685 farmers quarries. Besides this, 105 articles were broadcasted over All India Radio. Thirty four video programmes were prepared. Thirty three publications were brought out and 16 slide /film shows were conducted and 58 exhibitions and 60 campaigns were organised as part of the mass media utilisation activity.

PLANT CLINIC CENTRE

The scientists of the five Plant Clinic Centres at Vrinjipuram, Tirur, Killikulam, Srivilliputhur and Bhavanisagar periodically visited the farmers holdings, identifies pest and disease problems and suggested suitable remedial measures. These clinics also organised programmes for on-farm testing of pre-release cultures of various crops, management practices and plant protection methods besides undertaking surveillance work for the purpose of forecasting the outbreak of pests and diseases. Preparation of calendar for pests and diseases, evolving production formulae for important pests and diseases and conducting case studies were the other activities of the Plant Clinic Centres. The Plant Clinic Centres carried out 142 trainings, beneficiaries being 1,415 farmers, 735 farm women, 1,125 extension workers and 496 youths. Besides individual and group contacts, 29 demonstrations, 138 village / group meetings, 10 farm / field days and two farmers days were conducted. These centres also organised 531 farm advisory services, answered 253 farmers' queries, published 65 articles in details and farm magazines, broadcasted 80 radio programmes, two video programmes, released 10 publications, 15 exhibitions and 18 campaigns.

INSTITUTION - VILLAGE LINKAGE PROGRAMME (IVLP)

Under Tamil Nadu Agricultural University, IVLP project was launched in Muthankuppam village of Vridhachalam taluk. Based on the agro ecosystem analysis, problems pertaining to green revolution and small production system were identified and ranked on priority basis at different micro farming situations. To find

out a solution for identified problems, suitable technological interventions were formulated, assessed and refined through verification trial and on farm trial in real farm situations with active participation of farmers.

MODEL VILLAGE ADOPTION PROGRAMME

All Heads of Transfer of Technology Centres have identified Model Villages one each in dry ecosystem and irrigated ecosystem in order to disseminate the technologies and make farmers to adopt them. Regular farm advisory services are being carried out to solve the problems of the farmers.

COMMUNICATION CENTRE

The Communication Centre of Tamil Nadu Agricultural University, Coimbatore disseminated the innovations of the University by various methods. It conducted distant learning programmes like Farm School on All India Radio and Correspondence Courses. Totally 11,425 persons visited the Central Exhibition and Museum and got benefited.

DISTANCE LEARNING PROGRAMME

1. Farm School on All India Radio

During the period under report, lessons on Soil and Land Management, Modern Paddy Cultivation, Horticultural Crops for rainfed farming, Integrated Farming, Tankfed Paddy Cultivation, IPM for paddy, Samba Paddy Cultivation, Wasteland Development and value added agricultural products were carried out benefiting 1,914 participants. Contact programmes for the lessons on Samba Paddy Cultivation, Water Management , Wasteland Development and modern paddy cultivation were organised in which 249 farmers attended and got certificates.

2. Correspondence Courses

A total of 13 Correspondence courses namely medicinal plants, mushroom spawn production, farm forestry, modern paddy cultivation, oilseeds cultivation, sericulture, modern methods of grain storage, Bee-Keeping, Spices, Farm Tools and Implements, Processing of Fruits and Vegetables, Production of Fruits and Flower Seedlings, Biological Control of Pests, Production technologies for the seedlings, organic farming and hybrid vegetables cultivation were offered for which 942 farmers enrolled. Contact programmes for 12 courses were conducted and certificates were issued to 443 farmers.

3. Cassette Lessons

The lessons on seed production technology in paddy, cashew cultivation, medicinal plants, coconut cultivation, ornamental plants, reclamation of saline and alkaline soils and teak were prepared. Besides 67 audio cassettes were sold.

4. Radio Programme

Thirty two programmes were recorded for All India Radio.

5. Video Production Unit

The Video Production Unit involved in the production of video programmes on agriculture and allied activities in addition to the programmes for telecast through Doordarshan Kendra, Chennai. During the period under report, 63 programmes were prepared and 56 messages were sent to Doordarshan Kendra, Chennai for telecast. About 390 pre-recorded video programmes were sold to Agricultural Officers and farmers. Further video coverage was arranged during 51 important functions of the University. Besides 44 video shows were also conducted.

TRAINING UNIT

The Training Unit of the Directorate of Extension Education conducted 24 training programmes benefiting 2,444 participants. The participants were extension personnel from state Department of Agriculture, Horticulture, Banks, Private Entrepreneurs, subject matter specialists and extension officers from other states, IAS probationers and housewives.

PERIODICALS

TNAU Newsletter

This is a monthly journal published by the Directorate of Extension Education. Through this, the latest research findings and various extension activities were highlighted regularly and sent to all the Agricultural Universities, selected research organisations, development departments and scientists of India and abroad. At present 550 copies are printed and distributed.

TNAU Seithi Madal

This is a Tamil monthly newsletter disseminating the technologies in agriculture and allied subjects relevant to the season, variety and crops among the farming community and other officials of the development departments of the State. The Seithi Madal also carries important aspects such as season and location specific recommendations, new findings, forecasting of pests and diseases, climatic changes and their impact etc., as an effective tool in transfer of technology. At present 1,700 copies are printed and distributed to the convenors of Farmers' Discussion Groups of Krishi Vigyan Kendras, Farmers Training Centres and Officials of the Development Departments of the State.

AGRICULTURAL INFORMATION SERVICE

The regular flow of information is ensured to the extension workers and farmers through the Agricultural Information Service. On all Wednesdays, timely and need based messages were processed with the help of scientists and disseminated through all mass media. Besides, this centre also issues regular press notes highlighting the ongoing activities of the University. During the period under report, 3,312 visitors reçeived information from Agricultural Information Service.Proper / regular counselling was given to the farmers with the help of Heads of Departments and the Directors for Advisory Services.

ACTIVITIES

1.	Wednesday meeting messages	-	26
2.	Press Reports Issued	-	176
3.	Engagement column news	-	128
4.	Press meet conducted	-	59
5.	VIPs visited	-	90
6.	Farmers quarries answered	-	385

Table I. Number of trainings conducted

Sl.No.	Centre	No.of Trg.	Farmers	Beneficiaries (in number) Farm Women	Extn. workers	Youth
1.	KVK,Coimbatore	97	3680	1006	45	-
2.	KVK,Madurai	96	1661	795	1621	-
3.	KVK,Sirugamani	97	894	434	2953	436
4.	KVK,Virudhachalam	83	1248	486	50	186
5.	KVK,Sandhiyur	81	1996	477	382	-
6.	PCC,Virinjipuram	18	180	200	150	31
7.	PCC,Tirur	49	400	260	220	160
8.	PCC,Killikulam	34	400	210	400	80
9.	PCC,Srivilliputhur	30	305	20	135	225
10.	PCC,Bhavanisagar	11	130	45	220	-

Table 2. Individual / Group Contact

S.No.	Centre	Demon stration	Group village/ meeting	Farm/ Field days	Farm-ers day	Farm advisory service	Farmers queries answered
1.	KVK,Coimbatore	20	15	12	1	66	137
2.	KVK,Madurai	27	31	1	2	108	90
3.	KVK,Sirugamani	19	10	5	1	209	88
4.	KVK,Virudhachalam	11	15	3	1	365	210
5.	KVK,Sandhiyur	15	5	5	3	199	160
6.	PCC,Virinjipuram	-	28	1	-	119	33
7.	PCC,Tirur	9	32	1	1	48	40
8.	PCC,Killikulam	3	38	2	1	173	30
9.	PCC,Srivilliputhur	16	22	5	-	79	117
10.	PCC,Bhavanisagar	1	18	1	-	112	33

Table 3. Mass Media Utilisation Programme

S. No.	Centre	Writing to dailies and farm Magazines	Radio Programme	Video Programme shows	Publications brought out	Slide/ film shows	Exhibition	Campaigns
1.	KVK,Coimbatore	11	27	3	1	4	8	14
2.	KVK,Madurai	23	10	-	6	-	10	6
3.	KVK,Sirugamani	13	6	9	7	9	3	13
4.	KVK, Virudhachalam	14	27	22	8	-	8	11
5.	KVK,Sandhiyur	44	25	-	11	3	29	16
6.	PCC,Virinjipuram	9	6	-	2	-	-	2
7.	PCC,Tirur	9	28	-	-	-	7	7
8.	PCC,Killikulam	37	32	2	2	-	2	2
9.	PCC, Srivilliputhur	8	14	-	-	-	5	5
10.	PCC, Bhavanisagar	2	-	-	6	-	1	2

APPENDIX - I

IMPROTANT CIVIL WORKS COMPLETED

		(Rs. in lakhs)
1.	Providing barbed wire fencing at North Farm under Oilpalm G x E scheme TRRI, Aduthurai.	1.40
2.	Constn. of field Laboratory at North farm under Oilpalm G x E scheme TRRI, Aduthurai.	2.00
3.	5 Units of Prof.Qtrs. and 16 units of Associate Prof.Qtrs. Coimbatore.	159.55
4.	18 Units of Associate Prof.Quarters, Coimbatore	138.32
5.	Visiting Prof.Qtrs. (6 units), Exam hall and Dispensary, Coimbatore.	84.85
6.	24 Units of Prof.Qtrs. and 2 Units of Asst. Prof.Qtrs, Coimbatore.	230.00
7.	Modernised kitchen and Kitchen equipment, in Ladies Hostel and Tamilagam Hostel, Coimbatore.	26.30
8.	Modernised sewage Treatment Plant and Sanitary arrangements,Coimabtore.	28.10
9.	18 Units of Accounts Officer Qtrs., 15 Units of Superintendent Qtrs. and 20 Units of Working class Qtrs. Coimbatore.	177.30
10.	Azolla Laboratory -Growth chamber and walk in chamber under DBT Scheme, Coimbatore.	29.00
11.	Tissue culture lab and storage room, Coimbatore.	23.20
12.	Screen House Instructional farm at orchard in TNAU, Coimbatore.	5.00
13.	Farmers Hostel in front of WTC Hostel,Coimbatore.	9.00
14.	Building for Micro biology advanced centre,Coimbatore.	9.50
15.	Building for Agronomy lab in advanced centre, Coimbatore.	7.00
16.	Verterinary Hospital Building, AC & RI, Killikulam.	3.60

17.	Library Building, AC & RI, Killikulam.	20.00
18.	Students Welfare centre & Computer centre, AC & RI, Killikulam.	12.00
19.	Additional Dining Hall in the Ladies Hostel,AC & RI, Killikulam.	1.46
20.	Stadium, AC & RI, Killikulam.	8.00
21.	Providing ARIS Cell at CAE, Kumulur.	1.32
22.	Library building , FC &RI, Mettupalayam.	12.00
23.	Ladies Hostel, FC & RI, Mettupalayam.	20.10
24.	Computer centre and Students Welfare centre, FC & RI, Mettupalayam.	12.25
25.	Seed godown, ARS, Pattukottai.	6.00
26.	Thrashing floor, ARS, Pattukottai.	2.70
27.	Green House for Nursery Probagation, HC & RI, Periyakulam.	10.00
28.	Generator room, HC & RI, Periyakulam.	1.00
29.	Ground Level water tank in rear side of Academic block, HC & RI, Periyakulam.	3.30
30.	Borewell - 3 Nos. , HC & RI, Periyakulam.	2.30
31.	Students welfare centre and computer centre,HC & RI, Periyakulam.	11.75
32.	Intergrid water supply arrangement for implementtation of Seed production components, HC & RI, Periyakulam.	3.00
33.	Borewell with Pumpset, HC & RI, Periyakulam.	2.00
34.	Pump house, ARS, Ramanathapuram.	0.42
35.	Four numbers of Pump houses, SRS,Sirugamani.	0.48
36.	Meterological structures and fencing,SRS,Sirugamani.	0.12

37.	Watchman sheds - 3 Nos. in field No.A.1.a A.6.a and D.4.a., ADAC & RI,Trichy.	0.15
38.	R.C.Coloums for main Entrance gate, ADAC & RI,Trichy.	0.25
39.	R.C.Coloums for staff Quarters entrance gate ADAC & RI, Trichy.	0.23
40.	Providing ARIS Cell, ADAC & RI, Trichy.	1.65
41.	Power wiring and Electrical Installation to ARIS Cell, ADAC & RI, Trichy.	1.57
42.	Students welfare centre and computer centre, ADAC & RI, Trichy.	1.15
43.	Seed godown under OPP Scheme, SWMRI,Thanjavur.	9.15
44.	Thrashing floor under OPP scheme SWMRI, Thanjavur.	0.85
45.	Intergrid water supply arrangements,NPRC,Vamban.	2.281
46.	New Borewell in Block A2, of NPRC,Vamban.	3.00
47.	Seminar Hall, KVK,Vridhachalam.	12.00
48.	Seed godown seed lab and Pump house,RRS,Vridhachalam.	9.16
49.	Borewells ar G6 field,RRS,Vridhachalam.	2.98
50.	Borewells 2Nos.at B9 & D9 field, RRS,Vridhachalam.	6.00

APPENDIX - II

LIST OF SCHEMES

University Research Schemes - Plan

		1998-99 Revised Estimate (Rs. In Lakhs)
1.	Establishment of Transgenic Green House Facility, Coimbatore .	25.00
2.	Study on physiological bio-chemical and molecular mechanisms of Thermo sensitive Genic Male Sterility (TGMS) in rice ,Coimbatore.	3.50
3.	Study on Seed Technology of certain annual flowers, Coimbatore .	6.00
4.	Production of stable Cytoplasmic genic Male sterile System (CMS) lines and hybrids in Sunflower, Coimbatore.	2.00
5.	Study for improving the yield of irrigated pulses (Blackgram) through plant type selection with increased percent of cross pollination, Aduthurai and Thanjavur.	5.00
6.	Development of a Sera Bank for important Virus diseases occurring in Tamil Nadu ,Coimbatore.	2.35
7.	Study on Capital formation in Agriculture in selected regions of Tamil Nadu ,Coimbatore.	3.00
8.	Study on factor productivity improvement analysis in Tamil Nadu Agricultural Sector, Coimbatore.	2.00
9.	Study to improve field persistence of neem products in rice and rice based ecosystem, Aduthurai.	2.50
10.	Study on capturing the benefits of North East Monsoon rain in Tamil Nadu, Aruppukkottai.	1.67
11.	Scheme for starting Post Graduate Diploma in Plant Protection, Coimbatore.	7.00

12.	Scheme for the establishment of an Advance Centre for Soil and Crop Management Studies,Coimbatore.	13.18
13.	Scheme for strengthening of the training division in the Directorate of Extension Education, Coimbatore.	5.56
14.	Scheme for strengthening of Estate Office, Coimbatore.	9.06
15.	Scheme for starting of M.E. (Agri) in Post-Harvest Technology, Coimbatore.	0.10
16.	Scheme for strengthening of radiation research, Coimbatore.	4.52
17.	Scheme for strengthening of the Directorate of Research, Coimbatore.	7.19
18.	Development of suitable strain of *Azospirillum* for commercial crops, Coimbatore.	1.95
19.	P.G.Education and Training programme leading to M.Sc. Degree in Bio Technology, Coimbatore.	8.95
20.	Exploitation of hybrid vigour and development of superior hybrids in redgram, Coimbatore.	2.22
21.	Establishment of Video-Library, Coimbatore.	2.41
22.	Water Technology Centre, Coimbatore.	27.22
23.	Starting of Post-Graduate Programme leading to M.B.M, Coimbatore	5.10
24.	Development of monoclonal antibodies for RTV in rice and CMV and BTV in banana, Coimbatore.	1.25
25.	Scheme for the establishment of a Centre for Sericulture, Coimbatore	7.78
26.	Scheme for strengthening Post-Graduate teaching and research in Agricultural Marketing Management, Coimbatore.	3.51
27.	Scheme for establishment of an Advance Centre for Studies on Plant Protection, Coimbatore.	6.95
28.	Remote Sensing Unit-Agricultural Applications, Coimbatore.	4.15

29.	Strengthening foliar diagnosis research to alleviate nutritional and physiological disorders in crop plants, Periyakulam.	4.27
30.	Studies on the decline in the yield of grapes, banana, tomato and brinjal due to nematode and fungus complex, Periyakulam.	3.10
31.	Horticultural College and Research Institute, Periyakulam.	13.05
32.	Anbil Dharmalingam Agricultural College and Research Institute, Trichy.	34.80
33.	Tissue culture technique for the forest trees, Mettupalayam.	2.21
34.	Isolation and popularisation of superior genotypes of match wood trees, Mettupalayam.	2.02
35.	Forest College and Research Institute, Mettupalayam	16.85
36.	Agricultural College and Research institute, Killikulam	80.70
37.	Establishment of Seed Technology Unit,Killikulam	3.05
38.	Scheme for strengthening and coordinating rice virus disease and mycoplasma disease, Madurai.	4.20
39.	Scheme for development of Seed Technology Unit, Madurai.	3.60
40.	Establishment of Centre for Nematode Pests of Crop Plants, Madurai	2.93
41.	Scheme for strengthening and coordinating rice entomological research, Madurai.	7.90
42.	Scheme for strengthening of research on chemistry of submerged soil, Aduthurai.	1.22
43.	Scheme for the production of breeder seeds in paddy,Aduthurai.	5.58
44.	Scheme for commercial exploitation of heterosis in rice, Aduthurai.	1.79
45.	Evaluation of scented and non-scented rices, Aduthurai.	1.11
46.	Scheme for the establishment of Regional Research Station, Aruppukottai.	15.48

47.	Scheme for upgradation of Tamil Nadu Rice Research Institute and reorganisation of the set up of the Directorate of Research, Aduthurai.	16.65
48.	Scheme for breeder seed increase, Bhavanisagar.	12.23
49.	Establishment of a seed complex including seed health, testing and training, Bhavanisagar and Mettupalayam.	4.47
50.	Scheme for upgrading Sugarcane Research Station, Cuddalore.	10.26
51.	Technology development of waste land reclamation in coastal area, Cuddalore.	2.69
52.	Establishment of laboratory for survey and research on golden nematodes of Potatoes, Vijayanagaram, Uthagamandalam.	6.70
53.	Scheme for investigation on the management of pests and diseases of hill fruit and vegetable crops of the Nilgiris, Uthagamandalam.	3.53
54.	Sub-project for strengthening Horticultural Research Station, Thadiyankudisai.	1.16
55.	Operational research on pests and diseases management in rice, Kattuthottam, Thanjavur.	2.54
56.	Scheme for vegetable seed production, Palur.	3.54
57.	Mass production and quality control of bio-fertilizers, Paiyur.	2.37
58.	Sub-project for strengthening Regional Research Station, Paiyur.	11.57
59.	Scheme for strengthening of seed production programme, Pattukottai.	3.01
60.	NARP sub project at Thirupathisaram.	3.37
61.	Banana Research Station, Virinjipuram, Vellore.	9.35
62.	Scheme for the establishment of Agricultural Research Station, Vellore.	4.80
63.	Development of sorghum varieties for various industrial purposes, Vellore	1.90

64.	Scheme for strengthening of Coconut research in Thanjavur district, Veppankulam.	7.28
65.	National Pulses Research Centre, Vamban.	7.40
66.	Scheme for breeder seed production in groundnut, Vamban.	2.78
67.	Scheme for strengthening Plant Clinic Centres at Vellore, Tirur, Killikulam, Srivilliputhur and Salem.	15.21
68.	Scheme for research on improvement of cultivation of Palmyrah , Srivilliputhur and Killikulam.	1.79
69.	Scheme for research on intensification of medium staple Cotton, Srivilliputhur, Kovilpatti and Aduthurai.	5.62
70.	Scheme for research on introduction of new tree species, Coimbatore, Cuddalore and Vamban.	2.48
71.	Scheme for popularisation of agricultural implements through Krishi Vigyan Kendra, Coimbatore and Madurai.	3.48
72.	Scheme for seed production and seed storage studies on sub-tropical and temperate crops, Periyakulam (Kodaikanal and Thadiyankudisai sub-centres.)	4.07
73.	Scheme for strengthening of breeder seed-programme at Vridhachalam, Tindivanam, Kattupakkam and Periyakulam.	17.90
74.	Scheme for multiplication and distribution of Pulses, Vamban, Tindivanam and Coimbatore.	13.04
75.	National Agricultural Research Project, Cauvery Delta Zone, Aduthurai and Trichirappalli.	22.07
76.	Sub Project for strengthening Regional Research Station, Vridhachalam, Cuddalore, Tindivanam and Kattupakkam.	12.02
77.	Sub-Project for strengthening Regional Research Station, Aruppukottai, Srivilliputhur and Pudukottai (Vamban).	17.87
78.	Scheme for establishment of Regional Laboratory at Trichirapalli, Paiyur and Yercaud.	12.52
79.	Krishi Vigyan Kendra, Coimbatore and Madurai.	22.97

80.	Scheme for starting bio-fertilizer production and quality control unit, Coimbatore and Madurai	3.74
81.	Development of extra early rice variety, Aduthurai.	1.42
82.	Evolving chilli varieties resistant to mosaic and thrips, Killikulam.	1.40
83.	Programming for diversified production activities for dryland and wasteland, Pudukottai (Vamban).	1.32
84.	Strengthening the Department of Bio-energy, Coimbatore.	5.02
85.	Setting up a pilot plant for fruit and vegetable based processing industry, Periyakulam.	1.22
86.	Management practices for bamboo under irrigated conditions, Mettupalayam.	1.39
87.	Tree improvement in exotic species for wood based industries, Mettupalayam.	2.01
88.	Development of varieties resistant to rice blast, sheath rot and ragi blast using tissue culture, Coimbatore.	1.28
89.	Season specific seed production technology for the development of seed districts in generating quality seed for yield maximisation, Aduthurai.	1.45
90.	Scheme for exploitation of male sterile lines for developing hybrid cotton, Coimbatore.	4.22
91.	On farm trials on improved technologies developed for crops grown in Salem and Dharmapuri districts, Salem.	3.20
92.	Variety Release Award.	1.00
93.	Development of wastelands of Pasumpon Muthuramalingam and Ramanathapuram Districts through Crop Husbandry, Agro-Forestry and Horticultural crops, Ramanathapuram.	6.85
94.	Identification of efficient strains of micro organisms and development of processes for bio conversion of farm wastes and urban wastes, Cuddalore.	1.20
95.	Physiological studies on salt tolerance and development of rice varieties tolerant to coastal and inland salinity at Regional Research Station, Tirur.	3.75

96.	Scheme on strengthening research on medicinal and herbal plants in the plains (Killikulam) and hills (Yercaud).	3.42
97.	Setting of agro based industry for processing vegetables, jack, sugarcane and coconut, Horticultural College and Research Institute, Periyakulam.	1.95
98.	Pollution due to Tannery, Cement factory, Paper Industry and Sugar factory and development of technology to overcome the problems, Killikulam.	3.43
99.	Advanced Centre for Training in Water Management, Coimbatore.	4.16
100.	Scheme for development of rice fallow pulses for Nellai Kattabomman and Chidambaranar Districts, Ambasamudram.	0.80
101	Development of hybrid sesamum for irrigated uplands, Vridhachalam.	0.95
102.	Development of maize varieties for industrial purposes, Bhavanisagar.	2.17
103.	Development of management practices for high productivity in Palm *Elaein guineensis*, Sirugamani.	2.03
104.	Establishment of model mechanised rice based farm in Cauvery Delta, Aduthurai.	1.02
105.	Management of phytonematodes through biocontrol and cultural practices in Turmeric, Bhavanisagar.	1.09
106.	Scheme for research on arid zone fruit crops, Kumulur	1.29
107.	Study on the salt encrustation problems in conveyance pipes and measures to tackle them, Coimbatore .	0.21
108.	Studies on processing and packaging of mushrooms, Coimbatore.	2.70
109.	Study of potential and application of plasticulture in agricultural production, Coimbatore.	2.70
110.	Shifting of Engineering College-Establishment of the Departments viz., Farm Machinery, Soil and Water Conservation, Agricultural Structure and Bio Energy, Kumulur.	0.01

111.	Establishment of quality control laboratory for bio-fertilizers. Madurai.	0.80
112.	Development of improved selections and evolving management system in Jack, Vridhachalam.	1.80
113.	Improvement of samba chillies for quality and yield, Kovilpatti.	2.05
114.	Developing high yielding coconut varieties with desirable quality attributes for tender coconut water trade, Veppankulam.	0.63
115.	Characterization and reclamation of theri lands in Nellai-Kattabomman and V.O.C.districts, Killikulam.	0.65
116.	Constraint analysis in production and marketing of coconut, banana and sugarcane in Cauvery Delta, Thanjavur.	0.35
117.	Development of efficient strains of VAM and phosphobacterium for tree crops grown in lateritic soils, Vijayanagaram.	1.50
118.	Evaluation of honey bees in increasing crop production and enhancing economic benefit, Bhavanisagar.	0.95
119.	Establishment of Agricultural Research Station, Perambalur (land cost only).	5.00
120.	Standardisation of technologies for dryflower production , Periyakulam and Kodaikanal.	7.85
121.	Introduction (indigenous and exotic), evaluation and selection of superior Turmeric genotypes with high curcumin for export, Coimbatore.	4.50
122.	Scheme for evolving production technologies for cut flower (Rose, Chrysanthemum and Orchids) under protected condition for export, Coimbatore	1.75
123.	Development of F1 hybrid for high yield and oleoresin content in chilli, Coimbatore	2.70
124.	Breeding for a dessert purpose baby corn, Coimbatore	2.00
125.	Use of earthworms as dispersal agents for beneficial microorganisms, Coimbatore.	5.95
126.	Increasing the post harvest life of fruits and vegetables by vacuum packaging, Coimbatore.	3.47

127.	Testing cotton seed purity by protein isozyme and molecular catalogue, Coimbatore.	1.90
128.	Agro- climatic regional planning for Coimbatore district, Coimbatore.	1.00
129.	Establishment of pilot plant for commercial production of predators *Cryptolamus montrusieri* and *Chrysopeia cornea, Coimbatore* .	2.07
130.	Scheme for the development of management practices for the control of red rot (*Colletotrichum facatum*) disease of Sugarcane, Cuddalore	5.51
131.	Establishment of Tapioca & Castor Research Station, Yethapur.	26.75

NON PLAN SCHEMES

1.	Scheme for improvement of sunflower in Tamil Nadu, Kovilpatti.	2.85
2.	Scheme for coordinated agronomic experiments in Sugarcane, Cuddalore.	4.98
3.	Scheme for research on nematode parasite of Sugarcane crop, Cuddalore.	2.90
4.	Scheme for biological testing of Pesticides Laboratory, Vamban, Kovilpatti, Aduthurai and Tindivanam.	6.10
5.	Scheme for improvement of groundnut through induction of mutation, Coimbatore.	1.28
6.	Scheme for studies on the residues of pesticides in plant and soil, Coimbatore.	3.31
7.	Scheme for research on citrus-dieback, Killikulam and Coimbatore.	1.53
8.	Scheme for improvement of redgram and soybean, Vamban.	2.85
9.	Scheme for evaluation of cumbu resistant to green ear and ergot diseases, Vamban and Kovilpatti.	4.06
10.	Scheme for intensification of pulses research, Vamban.	1.44
11.	Scheme for maximisation of pulses production, Vamban.	2.55

12.	Scheme for improvement of millets for grain and fodder, Kovilpatti.	2.64
13.	Scheme for improvement of wetland pulses, Aduthurai.	3.62
14.	Scheme for coordinated agronomic experiments on Sugarcane, Sirugamani.	5.20
15.	Agricultural Research Station, Ramanathapuram.	4.38
16.	Scheme for surveillance of pests and diseases, Vellore.	2.93

ICAR COORDINATED RESEARCH SCHEME (PARTLY FINANCED)

1.	All India Coordinated Research Project on Agronomic Research, Coimbatore, Thanjavur, Ramanathapuram and Vellore.	22.60
2.	All India Coordinated Research Project on Water Management, Bhavanisagar and Madurai.	13.25
3.	All India Coordinated Research Project on Dryland Agriculture, Kovilpatti.	11.52
4.	All India Coordinated Research Project on under utilised/under exploited plants, Mettupalayam.	4.05
5.	All India Coordinated Research Project on Sugarcane, Cuddalore.	3.68
6.	All India Coordinated Research Project on tillage requirement of major Indian Soils for different cropping system, Coimbatore.	5.58
7.	All India Coordinated Research Project on micro and secondary nutrients and pollutant elements in soil and plants, Coimbatore.	6.80
8.	All India Coordinated Research Project on long-term fertilizer experiment, Coimbatore.	2.16
9.	All India Coordinated Research Project on Agro Meteorology, Kovilpatti.	4.50
10.	All India Coordinated Research Project on investigation of correlation of soil test with crop response, Coimbatore.	7.04
11.	All India Coordinated Research Project on Oilseeds, Coimbatore, Vridhachalam and Sandhiyur.	15.00

12.	All India Coordinated Research Project on Jute and allied fibres, Aduthurai.	2.50
13.	All India Coordinated Research Project on Rice Improvement, Coimbatore, Aduthurai and Madurai.	22.65
14.	All India Coordinated Research Project on Sorghum, Coimbatore.	10.70
15.	All India Coordinated Research Project on Forage crops, Coimbatore.	7.10
16.	All India Coordinated Research Project on Cotton, Coimbatore, Kovilpatti and Srivilliputhur.	21.03
17.	All India Coordinated Research Project on Intensification of Research on the improvement of Pulses, Coimbatore and Vamban.	31.21
18.	All India Coordinated Research Project on Palm, Aliyamagar, Aduthurai, Killikulam and Veppankulam.	9.80
19.	All India Coordinated Research Project on Maize, Coimbatore.	5.11
20.	All India Coordinated Research Project on small millets, Coimbatore.	8.00
21.	All India Coordinated Research Project on Acarology, Coimbatore.	2.19
22.	All India Coordinated Research Project on pesticides, Coimbatore.	4.53
23.	All India Coordinated Research Project on plant parasitic nematodes with integrated approach for their control, Coimbatore.	4.46
24.	All India Coordinated Research Project on biological control of crop pests and weeds, Coimbatore.	2.87
25.	All India Coordinated Research Project on seed borne diseases, Coimbatore.	7.30
26.	All India Coordinated Research Project on Mushrooms, Coimbatore.	3.47
27.	All India Coordinated Research Project on Betelvine wilt disease, Sirugamani.	3.96

28.	All India Coordinated Research Project on weed control, Coimbatore.	3.98
29.	All India Coordinated Research Project on Spices and Plantation Crops, Coimbatore and Yercaud.	5.68
30.	All India Coordinated Research Project on Vegetables including chillies, Coimbatore.	4.95
31.	All India Coordinated Research Project on Cashew, Vridhachalam.	3.75
32.	All India Coordinated Research Project on post-harvest technology in horticultural crops, Periyakulam.	2.99
33.	All India Coordinated Research Project on Floriculture, Coimbatore	4.04
34.	All India Coordinated Research Project on Tuber Crops other than Potatoes,Coimbatore.	2.32
35.	All India Coordinated Research Project on Tropical fruits, Periyakulam and Coimbatore.	11.51
36.	All India Coordinated Research Project on Arid fruits, Aruppukottai.	4.75
37.	All India Coordinated Research Project on renewable energy sources, Coimbatore.	17.13
38.	All India Coordinated Research Project on farm implements and machinery, Coimbatore	18.32
39.	All India Coordinated Research Project on energy requirement in Agricultural sector, Coimbatore.	9.23
40.	All India Coordinated Research Project on intensive testing of power tiller and research and development of new machine to make them versatile, Coimbatore.	7.70
41.	All India Coordinated Research Project on biological nitrogen fixation, Coimbatore.	10.72
42.	All India Coordinated Research Project on Agroforestry, Mettupalayam.	5.56

43.	All India Coordinated Research Project on Soybean, Coimbatore.	2.01
44.	All India Coordinated Research Project on Sub Tropical Fruits (Mango), Periyakulam.	12.54
45.	All India Coordinated Research Project on salt affected soils, Trichy.	22.64
46.	All India Coordinated Research Project on Pearl Millet, Coimbatore.	6.10
47.	All India Coordinated Research Project on groundnut verification centre at Tindivanam, Vridhachalam, Aliyamagar and Bhavanisagar.	14.71
48.	All India Co-ordinated Research Project on Human Engineering & Safety in Agriculture, Coimbatore.	12.73
49.	All India Coordinated Research Project on Post Harvest Technology, Coimbatore.	9.12

ICAR - FULLY FINANCED SCHEMES

1.	Krishi Vigyan Kendra, Vridhachalam and Trichy	25.10
2.	Project for breeder seeds of annual oilseeds crops, Bhavanisagar and Vridhachalam.	8.21
3.	Frontline Demonstration in oilseeds, Coimbatore, Bhavanisagar, Aliyamagar, Vridhachalam and Tindivanam.	1.89
4.	Scheme for the promotion of research and development efforts on hybrids in selected crops, Coimbatore,Bhavanisagar and Tindivanam.	15.88
5.	Front line demonstration on oil seeds crops (kharif, summer and rabi) through Krishi Vigyan Kendras at Coimbatore, Madurai, Tiruchirappalli, Kattupakkam and Vridhachalam .	2.32
6.	Scheme for production of breeder seeds annual Kharif/Rabi oil seeds crops, Bhavanisagar and Vridhachalam.	0.83
7.	Front line demonstration on oil seeds component - Demonstrations on efficiency of Rhizobium inoculation on oilseeds under the All India Coordinated Research Project on BNF, Coimbatore.	0.20

8.	Front line demonstrations on oilseeds, sub-component Demonstration of improved package of practices for oil seeds with emphasis on balanced fertilisation through soil testing, Coimbatore.	0.10
9.	Front line demonstration for oilseeds, Sunflower hybrids, Bhavanisagar.	0.46
10.	Scheme for demonstration and popularisation of improved implements and machinery through Krishi Vigyan Kendra, Coimbatore.	3.01
11.	Front line demonstrations on production potentials of oil seeds crops-Soybean, Coimbatore.	0.82
12.	Front line demonstration on oilseeds, sub-component - Cropping systems research demonstration on production potential at ECF Centres, Vellore and Ramanathapuram.	0.50
13.	Front line demonstration in Sunflower (oilseeds), Coimbatore.	0.36
14.	Stand Alone Fuel Cell Power Plants for Rural Electrification in India, Coimbatore.	3.02
15.	Front line demonstrations on Pulses under National Pulses Development Project (NPDP), Coimbatore and Vamban.	0.84
16.	Creation of revolving fund for production of breeder seed of oilseeds, Vridhachalam.	1.00
17.	Methane emission in rice based cropping system, Aduthurai.	5.82
18.	Scheme for improvement of Curry leaf, Coimbatore.	4.39
19.	Front line demonstration of improved agricultural machinery for major Pulses.crops, Coimbatore.	9.10
20.	AICRIP on Groundnut-verification centre for Rape seed/Mustard, Vridhachalam & Coimbatore	0.30
21.	Improvement of Papaya through *invitro* culture, Coimbatore.	9.46
22.	Scheme for improvement of shelf life of Mandarin Orange in hill regions, Yercaud.	4.20
23.	*In situ* rain water conservation engineering measures in red and black cotton soils, Coimbatore.	4.84

24.	Genetic enhancement of quality rices for higher productivity and export, Aduthurai.	6.89
25.	Introduction and assessing manurial value of *Cassia nigricans* in Tamil Nadu, Coimbatore and Killikulam.	
26.	Herbal spices in Shevroy Hills, Yercaud	5.72
27.	Oilpalm-GEXE Interaction, Aduthurai	
28.	Front line demonstration on Ragi and small millets, Coimbatore.	0.40
29.	Establishment of Centre of Advanced studies in Genetics and Plant Breeding, Coimbatore.	41.25
30.	Scheme for intensification of research on Vanila, Thadiyankudisai.	3.78
31.	Establishment of Centre of Advanced studies in Agricultural Entomology, Coimbatore.	41.25
32.	Establishment of Centre of Advanced studies in Agronomy, Coimbatore.	41.25
33.	Centre of Advance Studies in Agricultural Microbiology, Coimbatore.	41.25
34.	Insecticides resistance management of Diamond Backmoth, Coimbatore.	5.59
35.	Studies on the pest potential of Mexican beetle, *Zygogramma bicolorata* introduced, Coimbatore.	7.39
36.	Development of Agro-forestry system for Arid & Semi Arid Tropics of southern districts, Madurai.	3.37
37.	Evaluation of *insitu* rain water conservation techniques for rainfed crops in North Western Zone of Tamil Nadu, Paiyur.	5.08
38.	Biological and chemical indices for maturity and quality of compost, Coimbatore	3.33
39.	Front Line Demonstration on Sorghum, Coimbatore.	0.16
40.	Flyash-A source of plant nutrients and soil amendment, Coimbatore	3.33

41.	Clonal propagation of Tamarind, Coimbatore	4.60
42.	Front line demonstration of Pearl Millet, Coimbatore	0.15
43.	Pilot project on Technology Assessment and Refinement through Institution -Village Linkages, Vridhachalam.	23.40
44.	Front Line Demonstration under Integrated Cotton. Development programme, Coimbatore. Srivilliputhur, Kovilpatti and Aduthurai	0.34 0.46 0.23
45.	Promotion of Hybrid research in vegetable crops, Coimbatore.	11.87
46.	Design and development of container models of different capacity for removing stored product insects from grain exploiting their behaviour, Coimbatore	3.10
47.	Management of Blister beetle in Pulse crops, Vamban	7.05
48.	Development of acceptable *insitu* moisture conservation, Bhavanisagar.	3.70
49.	Identification of suitable cultivation of Cassava under rainfed conditions, Coimbatore.	10.09
50.	Insect specific alpha amylase inhibitor from minor millets, Coimbatore	5.44
51.	Trials on small millets by Voluntary Centres, Paiyur	0.20
52.	Evaluation and development of high altitude early maturing Ragi and small millets, Coimbatore.	10.05
53.	Front Line Demonstration on Sugarcane, Cuddalore.	1.03
54.	Breeder Seed Production in Sugarcane, Cuddalore	3.00
55.	Exploration, evaluation and selection of elite lines in Horsegram, Coimbatore.	3.77
56.	Investigation on the effect of VAM in managing root knot nematode infestation.	7.14
57.	Front Line Demonstration of Maize, Coimbatore, KVK, Salem	0.60
58.	Management of seed borne pathogens and wilt disease of Coriander, Coimbatore.	4.37

59.	Techno-economic evaluation of on farm ground water usage, Coimbatore	7.75
60.	Drip irrigation studies in cotton for its compatibility, Coimbatore	4.33
61.	Generating and testing of Nitrogen fertiliser recommendations in the rice based cropping systems, Coimbatore, Madurai, Aduthurai & Tirur	2.00
62.	Studies on flavour profile on HPS Groundnut grown in different soil conditions in Tamil Nadu, Vridhachalam.	2.63
63.	Studies on enhancing the rhizophere competency in Rhizobium on selected grain legumes, Coimbatore.	3.34
64.	Front line Demonstration on soil test based crop response, Coimbatore.	4.24
65.	Imparting Biotic stresses like resistance to phyllody disease & antigastra pest through interspecific hybridisation in Sesamum-Coimbatore.	6.42
66.	Sustainable farming system model for lowland farms of Tamil Nadu , Coimbatore	7.44
67.	Studies on Identification & characterisation of host specific gene(s) for symbiotic association in Azolla, Coimbatore	4.197
68.	Development and use of temperature sensitive gene malesterile gene(TGMS) based on two line rice hybrids, Trichy	16.18
69.	Processing of Cassava based defated soyflower incorporated ready -to -use extruded product, Madurai.	7.98
70.	Module 3 World Bank Project on sustainable rainfed Agricultural Research, Kovilpatti.	0.30
71.	Extension of shelf life of loose flowers of Jasmine- Gundumalli for export, Coimbatore.	7.09
72.	Molecular characterisation of Rice brown plant hopper *Nilaparavata lugens* (Stal), Coimbatore.	6.12
73.	Development of Rice Hybrids suitable for saline & sodic soil conditions of Tamil Nadu, Trichy.	9.35

74.	Adhoc Res. Network- Exploitation of hybrid vigour in sesamum (*Sesamum indicum L*), Vridhachalam.	6.49
75.	ICAR - Technology Evaluation & Impact assessment, Shandiyur.	0.33
76.	ICAR - National Professor, Madurai.	20.00
77.	Management of soil borne pathogens of vegetable crops using flourescent *Pseudomonas* as Bio-control agents - Plant Pathology, Coimbatore.	9.39
78.	Performance evaluation of drip fertigation system with liquid & water soluble fertilizers for increasing crop productivity & quality of Tomato, Coimbatore.	2.96
79.	Revolving fund scheme Manufacture and supply of proven Agricultural equipments & Machinery, Coimbatore.	10.00
80.	Controlled atmosphere storage of Paddy, Kumulur.	19.00
81.	Research Network for the application of system stimulation in Agriculture,Coimbatore.	13.11
82.	Video film production and distribution on cost (Revolving fund scheme), Coimbatore.	8.00
83.	Scheme for Establishment of Agriculture Technology Information Centre, Coimbatore.	21.33

NARP Phase II sub Projects

(Rs. in lakhs)

I.	North Eastern Zone		
	1.	Vellore	61.58
II.	North Western Zone		
	2.	Paiyur	19.38
III.	Cauvery Delta Zone		
	3.	Aduthurai	22.13
	4.	Trichy	2.48
	5.	Kattuthottam	25.68
	6.	Sirugamani	36.20
IV.	Western Zone		
	7.	Bhavanisagar	24.64
	8.	Mettupalayam	55.45
V.	Southern Zone		
	9.	Periyakulam	45.32
	10.	Aruppukottai	19.50
	11.	Pudukottai	18.96
	12.	Srivilliputhur	7.90
	13.	Killikulam	7.94
VI.	Hilly and Tribal Zone		
	14.	Yercaud	43.42
	15.	Vijayanagaram	23.02
VII	High Rainfall Zone		
	16.	Pechiparai	66.74
	17.	Thirupathisaram	21.21

GOVERNMENT OF INDIA SCHEMES

		(Rs. in lakhs)
1.	Regional biogas training and development centre, Coimbatore	6.42
2.	Scheme for establishment of regional centre for fuel efficient stove technology (Technical backup support unit of National Programme on improved chulas), Coimbatore.	3.30
3.	Establishment of user centre at Tamil Nadu Agricultural University, Coimbatore under Bio-Technology Information System (BTIS), A national infrastructural facility. Bio-technology Unit, Coimbatore.	11.34
4.	Establishment of Centre for Plant Molecular Biology (CPMB), Coimbatore.	41.57
5.	Comprehensive scheme for estimating Cost of Production of Principal Crops, Coimbatore.	31.80
6.	Scheme for Rice Processing and Allied Equipments, Coimbatore.	3.50
7.	Plasticultural application and development in agricultural operation,Coimbatore.	1.69
8.	Central sector scheme for integrated programme for the development of Spices, scheme for production of foundation seed of Chillies and minor spices, Bhavanisagar.	44.59
9.	Microbial consortia for biogas production from leaf biomass,Coimbatore	4.93
10.	Agro-climatic regional exercise to district level in Tamil Nadu,Coimbatore.	1.35
11.	Starting of experimental Agromet Services, NCMRWF, Coimbatore.	1.00
12.	Central Sector Scheme-Development of medicinal aromatic plants, Kodaikanal and Virinjipuram.	21.37
13.	DST - Regulatory mechanism of absorption factor associates with anaerobic celluloytic bacteria, Coimbatore	6.68

14.	Studies for augmenting natural and artificial regeneration in Sandal, Mettupalayam	2.57
15.	Establishment of regional nurseries for generation of Cashew clonal planting materials, Vridhachalam.	12.00
16.	DBT-Mission mode project on technology development and demonstration of biofertilizer, BGA and Azolla, Coimbatore, Killikulam, Tirur, Salem, Trichy, Bhavanisagar and Thanjavur.	186.65
17.	BRNS-Source of substrate for biomethanation process in rice rhizosphere, Coimbatore.	11.18
18.	DBT- Establishment of production unit for development, production and demonstration of biological control agents, Salem.	33.29
19.	GOI-DBT-Field testing of genotypes of agro forestry utility,Mettupalayam	4.50
20.	GOI-Evaluation of transgenic plants against Cotton bollworms,Coimbatore.	20.74
21.	GOI-Union Planning Commission-Institutionalisation of agro-climatic regional planning exercise in Tamil Nadu, Coimbatore.	20.00
22.	National Remote Sensing Agency-Soil resource appraisal and land evaluation in selected water sheds in Tamil Nadu for integrated mission for sustainable development using remote sensing techniques, Coimbatore.	8.52
23.	Central sector scheme for Development & Cultivation of Medicinal plants, Periyakulam.	10.30
24.	Exploiting chitinase gene from *Trichoderma* for rice sheath blight, Coimbatore.	8.30
25.	Starting of experimental Agrometeorological Advisory Service, Kovilpatti.	1.00
26.	Studies on the effect of irrigation schedules & nitrogen levels on the yield & quality of Sugarcane through drip method of irrigation, Bhavanisagar.	1.86

27.	Bee keeping for improving crop production - Evaluation studies for introduction of Italian Bees, Yercaud and Periyakulam.	5.04
28.	Effect of irrigation schedules & nitrogen levels on the yield of Turmeric through drip method, Bhavanisagar.	0.80
29.	GOI- Bee keeping training programme, Coimbatore.	1.75
30.	Decision support system for a regional planning based on modeling in a GIS environment, Coimbatore	10.95
31.	Study of antiocident gene(s) in response of drought in rice, Coimbatore.	5.48
32.	ICFRE - Strengthening UG & PG programmes in FC & RI, Mettupalayam.	31.00
33.	Starting of Experimental Agro Meteorological Service (AAS), Aduthurai.	1.00
34.	ICFRE - Studies on application of treated / untreated sewage in plantations, Mettupalayam.	3.50
35.	DCFRE - An economic analysis of teak plantations in farm lands of Tamil Nadu, Mettupalayam.	1.31
36.	DBT- Characterisation of Banana Bunchy Top virus, host response to BBTV infection Coimbatore.	2.00
37.	ICFRE - Screening of superior genotypes in Neem for higher oil, Mettupalayam	3.11
39.	GOI DNES -High rate digestion by thermophilic anaerobes, Coimbatore	8.94
40.	Impact of integrated nutrient management in Social Forestry, Mettupalayam.	1.91
41.	ICFRE - Impact of interface forestry programme on Bio diversity, Mettupalayam.	2.31
42.	ICFRE- Clonal propagation of some tree species through tissue culture, Mettupalayam.	4.82
43.	NWDPRA - Watershed Development Research in selected watersheds of Tamil Nadu, Coimbatore.	84.00

44.	ICFRE - Alternate source of phosphorus in sustaining the productivity of Casuarina, Cuddalore.	2.41
45.	ISRU - Agroecological Zonation of rice growing areas under different irrigation systems, Coimbatore and Aduthurai.	1.13
46.	Bio diversity of Coccoids and their natural enemies in Western Ghats of Tamil Nadu, Coimbatore.	4.15
47.	Central Sector Scheme - Development and cultivation of Medicinal plants, Mettupalayam.	8.00
48.	ICFRE -Productivity of Tamarind plantation on stress sites: Physiological & Silvicultural Strategies to maximise flowering & Fruiting ,Mettupalayam.	4.762
49.	DBT -Biological control of silkworm uzifly *Exorista bombycis* in tribal villages of Tamil Nadu,Coimbatore.	4.95
50.	Tree Improvement in Teak -ICFRE, Mettupalayam	10.98
51.	ICFRE Forest Tree Seed Technology, Mettupalayam	10.39
52.	ICFRE Tree Improvement in Neem, Mettupalayam	8.54
53.	ICFRE -Tree Improvement in *Acacia nilotica*, Mettupalayam	11.46
54.	ICFRE -Tree Improvement in Eucalyptus,Mettupalayam	12.46
55.	ICFRE -Tree Improvement in Bamboos,Mettupalayam.	9.74
56.	DBT -Microbial control of *Plutella xylostella*, Coimbatore.	12.58
57.	DBT-Green Cotton poduction technology, Madurai	18.90
58.	DBT -Development of Microencapsulated formulations of nucleus polyhedrosis viruses with greated pest control potentials, Coimbatore.	5.16
59.	BARC - Transfer co-efficient of radionuclides in field crops in food chain pathways - Coimbatore	17.95
60.	Biodiversity of spiders in the Western Ghats of Tamil Nadu, Coimbatore.	8.76

61.	Starting of experimental Agrometerological Advisory services - Pechiparai	1.00
62.	GOI- R&D scheme on Establishment of Insect cell lines for Bio technological applications, Coimbatore.	18.17
63.	Isolation and Development of virulent strains of beculovirus of groundnut red hairy caterpillar,Madurai. Entomology - Madurai	9.87
64.	R & D scheme Hydro economic interaction between tank and well water and possibilities for conversion of tank into percolation pond,Coimbatore.	6.69

International Collaborative Schemes

(Rs in lakhs)

1.	Studies on the utilisation of domestic and urban sewage and sludge and industrial waste for increasing crop production, Coimbatore.	3.23
2.	Project for standardisation of seed production, processing and storage technology for tree crops, Coimbatore.	14.99
4.	FF Grant 920 - 0880 -Study on the relationship between management authority and performance in tanks in Tamil Nadu, Coimbatore.	18.27
5.	NRI - TNAU Development of technology for reprocessing and formulation of polyhedrosis virus of American Bollworm,Coimbatore.	44.62
6.	IRRI- Mega project - Development of research methods to quantify the relationship between soil quality and productivity of rice systems in long term experiments, Aduthurai.	15.60
7.	FF Grant - Coping behavior to growing ground water scarcity in Tamil Nadu, Madurai.	10.85
8.	RFF -Search for elicitor inducible antifungal non-host chitinase Gene for management of rice sheath blight, Coimbatore.	12.40
9.	RFF - Rice sheath blight, Coimbatore.	19.52
10.	RFF - Evolving an efficient system for rapid regeneration of transgenic rice lines of elite indica cultivars, Coimbatore.	11.49
11.	RFF -Identifying genes associated with water stress tolerance in rice, Coimbatore.	17.99
12.	RPF - Isolation & characterisation of insecticidal proteins from local isolates of *Bacillus thuringiensis* active against rice pests, Coimbatore.	17.99
13.	ACIAR -Pollution of agricultural land due to waste disposal from tannery industries, Coimbatore.	14.20
14.	IRRI - Impact of modern rice technology on income distribution and poverty in rural Tamil Nadu, Madurai.	1.90

15.	University of Guelph open learning programmes for seed production technology, Coimbatore ...	2,97,000(Canadian Dollars)
16.	IRRI - Knowledge, adoption and Constraints regarding IPM in rice farming, Coimbatore.	2.5
17.	ICRISAT - Pearmillet, Madurai.	1.00
18.	IRRICRE MNET - Onfarm evaluation of chlorophyll meter based nitrogen management, Aduthurai.	2.52
19.	IRRI - Epidemiology - Management of RTD, Coimbatore	2.50
20.	IRRI - Characterisation of flora and fauna in rice ecosystem in Tamil Nadu, Coimbatore.	3.50
21.	IIBC UK - Development of a strategy for control of parthenium weed in India using fungal pathogens, Coimbatore.	2.20
22.	IRRI -Socio Economic evaluation of the adoption of rice hull stove in Cauvery Delta area, Thanjavur	US $ 650.00
23.	RFF -Molecular marker assisted selection for drought resistance improvement in rainfed lowland rice, Coimbatore	US $ 55,600/-
24.	RFF- Mapping resistance gene(s) to Yellow stem borer in rice,Coimbatore	6.37
25.	RFF Marker assisted selection for leaf folder resistance in rice,Coimbatore	4.11
26.	NRI - Univ.of Reading - Development of nematode resistance in Banana & Plantations, Coimbatore	15.30
27.	IRRI -Better understanding of options strategies for improving the efficiency of rain water use and crop performance in drought eco system sub Component economics of different rice establishment methods in Kerala, Coimbatore.	0.55

28.	IRRI - Development of improved nitrogen management practices for wetseeded and transplanted, Coimbatore.	3.53
29.	SDC - Integrated pest management of leafweber in Mulbery, Coimbatore.	9.49
30.	SDC - Integrated pest management in spiraling whitefly on whitefly on Mulbery,Coimbatore	9.08
31.	RFF - Genetic Engineering of PR-5 proteins in rice for the management of major fungal diseases Pl.pathology, Coimbatore	13.22
32.	IRRI - UNDP - Improving the database - on irrigated rice in India for upscaling methane emission Madurai.	1.20
33.	RFF - Engineering resistance in elite Indica cultivars to major diseases of rice	10.22
34.	RFF - Identifying and transferring C&TCS from wild rice species affecting yield ,maturaity date , drought toleranceand grain quality to cultivated rice,-Coimbatore.	20.96
35.	RFF - Genetic engineering of Sorghum for resistance to fungal diseases, Coimbatore.	15.18
36.	CRMI -INMI - Collaborative Project on strategies for vector control, conserving water and increasing food security, Madurai	3.60
37.	NIES - Japan - Collaborative Project on Role of Rural Community in Common Resources Management,Madurai.	5.08
38.	NRI - UK scheme - Collaborative research project on biological control of legume pod borer with CABI Bio-Science . United Kingdom.	2.07

Private Agency Schemes

		(Rs.in lakhs)
1.	Scheme for institution of Professorial chair in Agricultural Marketing, Department of Agricultural Economics, Coimbatore	1.30
2.	Establishment of a chair of Professor of Agronomy for research in fertilizer use and management, Coimbatore	0.89
3.	Research project for maximisation of yield in rice, Coimbatore.	0.95
4.	Establishment of a chair of Professor of Agricultural Entomology, Pesticide Toxicology, Coimbatore.	1.10
5.	SPIC Chair Endowment - Professor (Soil Science and Agricultural Chemistry), Coimbatore.	1.20
6.	Investigation on the bacterial insecticides Bacillus (BTK) and its efficacy in the control of certain important crop pests, Coimbatore.	0.27
7.	All India Bone Millers Association, New Delhi - Evaluation of raw bone meal as phosphatic source for crops of different soils, Coimbatore.	1.00
8.	SANDOZ - India Limited - Evaluation of San 6338-230 CS 045 against Cotton pest, Coimbatore.	1.50
9.	Coffee Board - Improvement of Coffee processing equipments, Coimbatore.	3.00
10.	Endowment in botanical pesticides, Coimbatore.	4.43
12.	Society for Social Forestry Research and Development- Exploiting Mycorhizae for Neem nursery, Coimbatore	1.05
14.	State Department of Forest - Study on testing of pest and disease in testing seed and seedlings of Forestry crops and evolving suitable measures for their control, Mettupalayam.	2.00
15.	Physical Research Lab. Ahmedabad. Methane flux management from Paddy soil Ecosystem, Coimbatore.	1.60
16.	TNPL -Evaluation of long-term effect on utilization of effluent waste for irrigation, Coimbatore.	6.34

17.	AFPRO -Utillisation of Bio-gas for heating and power generation, Coimbatore.	1.20
18.	Potash and Phosphate institute of Canada India programme-Strengthening of research on phosphorus soil fertility management, Coimbatore.	4.40
19.	SANDOZ -Determination of Ekalux 20 AF and SAN 65381240 CS on Cardamom, Groundnut and Cotton and cholorothalonil 75 WP and 40 CC in banana, Coimbatore.	3.21
20.	T.Stanes & Co-Studies on residues Nimbicidine formulation, Coimbatore.	1.99
21.	SKM Feeds -Recycling of poultry drops as fertilizer and feed, Coimbatore	1.50
22.	TNSCS & T.Halogenation of fresh seeds to control deterioration during storage, Coimbatore.	2.64
23.	TNSCS & T-Industry -institutional interaction cell Coimbatore.	0.36
24.	TNSCS &T-Studies on microbial decomposition of nitrogen fixing green manure, *Sesbania rostrata*, Coimbatore.	2.15
25.	TAN India Collaborative study to identify tannin rich species of *Acacia* and other species, Mettupalayam	2.40
26.	Fact-Evaluation of slow release/ controlled release fertilizers,Coimbatore	6.00
27.	NOCIL -Evaluation of Nocil plant growth regulators, Coimbatore.	0.55
28.	State Dept. Of Forest - Propagation of Sandal (*Santalum album*) through synthetic seeds, Mettupalayam.	3.35
29.	Industrial toxicology Research Lucknow -Bioefficacy and determination.	1.80
30.	Bayer (I) Ltd. - Endowment on Professorial chair in Entomology, Coimbatore.	10.00

31.	SANDOZ -Studies on diseases of Cabbage, Coimbatore.	0.55
32.	Kothari sugars -Fortified pressmud and spentwash, Trichy.	13.36
33.	SIV- Decolourisation of visco factory effluent, Coimbatore	17.32
34.	ZENECA ICI Agrochemicals Bio efficacy and determination of Lamdacyhalothrine (Karate) residues on Chillies, Brinjal and Tomato, Coimbatore.	2.24
35.	SPICES Board -Testing of elite varieties of Paprika for commercial exploitation in Tamil Nadu,Coimbatore	0.50
36.	SPICES Board -Mass multiplication and supply of Tamarind,Coimbatore	6.90
37.	TNSCST -Standardisation of electrophoretic techniques for assessing the genetic purity of seeds.	2.10
38.	TNSCST-Development of ecofriendly bio pesticide for management of groundnut foliar diseases, Coimbatore	2.85
39.	AISHTMA- Reuse of Tannery waste for Agricultural Purpose, Coimbatore	4.92
40.	Parry Agro India Ltd.- Research on effect of coir compost & fertilizer on soil health.,Coimbatore	1.35
41.	EID Parry (India) Ltd - Studies on production & utilisation of bioearth compost & liquid fertilizer from pressmud & distillery effluent as source of organic nutrition to sugarcane, Trichy	9.50
42.	ISAE, Bombay - Computerisation & analysis of cost of cultivation survey data,Coimbatore.	2.50
43.	Godrej Agrovet Ltd - Evaluation of Diammonium phosphate coating agent in rice,Coimbatore	0.68
44.	TNSCS & T -Dialogue with rice farmers on fertilizer application , Coimbatore.	0.10
45.	ICI Pharma Ennore -Assessment of sludge & effluent of ICI pharma for sustaining soil & environmental health, Coimbatore.	2.75
46.	Gharda Chemicals - Evaluation of mepiquat residues in Potato. Bhavanisagar.	0.90

47.	Fertilizer Association of India- Balanced fertilisation for correction of sulphur deficiency, Coimbatore.	0.40
48.	Mahyco Res. Foundation - Hybrid rice technology Coimbatore.	2.25
49.	De-NOCIL - Evaluation of the bioefficacy of Plant Growth Regulators on Redgram, Groundnut, Chillies & Bhendi Coimbatore.	1.00
50.	Kilburn Chem. Ltd., Evaluation of Ferro Gypsum as a soil amendment & plant nutrient source, Coimbatore.	1.03
51.	Sakthi Soyas - Designing, developing & testing engine operated dibbler for rice fallow Soybean, Coimbatore.	0.86
52.	ICAR /MRF - Collaborative Research Scheme -Research and Development Project on Hybrid rice - Seed Technology, CBE.	0.46
53.	Sakthi Soyas - Soyabean cultivation in erstwhile Thanjavur Dist - Problems & prospects - Aduthurai	2.00
54.	Zenece ICI - Studies on persistence & degradation of Acetocholor in rice plant, soil, water and their residues in rice grain and straw, Madurai.	2.04
55.	Godrej - Agrovet -Physiological & Biochemical effect of Bressinolides on the productivity of Rice - and Groundnut , Coimbatore.	0.96
56.	Zenece - ICI Chemicals - Studies on testing "Bio efficacy and persistence of systemic fungicide and ANVK against rice sheath blight, Groundnut tikka leaf spot and powerdry mildew on grapes and Mango Coimbatore.	3.90
57.	Madras fertilizers Ltd - Development of Arid tolerant Azospirillium for Tea, Coimbatore	1.18
58.	BASF - Evaluation of CCC 10 AS residues in Cotton, Bhavanisagar.	0.80
59.	Thiru Arooran Sugars - Recyling of primary treated distillery effluent in Sugar cane, Rice,Castor as a source of fertigation, Trichy	3.00

60.	Potash & Phosphate Institute of Canada - Systemetic approach for evolving fertilizer optimum for maximum economic yields in rice based cropping system, Coimbatore	3.02
61.	DE- NOCIL-Evaluation of Bio-efficacy of spinosad and Acetomiprid (N1 - 25) on pests of Cotton - Madurai.	9.00
62.	S.V.Sugars - Soil & water resources investigation in sugarcane growing areas of parts of Kancheepuram District ,Coimbatore .	
63.	Ponds (India Ltd.,) - Composting of Mushroom. Stem waste and spint compound, Coimbatore.	0.72
64.	Cotton Corporation of India- Preumatic Cotton picker, Coimbatore .	6.50
65.	EID Parry - Development of Deep Trencher attachment to tractor for paired - row planting of Sugarcane ZRC - Coimbatore.	0.77
66.	Cotton Corporation of India - Cotton Technology Dissemination through Correspondence Cource, Coimbatore.	3.77
67.	Seshasayee Paper Board - Effect of Seshesayee Effluent on crop cultivation and Land Application, - Coimbatore.	0.63
68.	Training Programme on Diagnostic methods and correction of nutrient and physiological disorders in field crops , Coimbatore.	0.12
69.	MARICO - An Econometric Analysis of Coconut Industry in Tamil Nadu, Coimbatore.	10.50
70.	Evaluation of sulphur rich materials of Cochin Refineries Ltd, Coimbatore.	9.00
71.	Zeneca - ICI -Agro chemicals -Studies on the Bio-efficacy and residue of lambda cynalothrin on bengalgram, blackgram, onion, mango okra- Madurai.	2.58

72.	Evaluation study on Institutional community 'biogas plants in Tamil Nadu,. Coimbatore.	6.21
73.	NOVARTIS "Studies on the bio-efficacy and residues of *profenofos* diepenthiron metalaxyl and prepiconazole on cardamom, Castor and Chilli, Madurai.	6.96
74.	M/s Gharda Chemicals Bio -efficacy of diflubenzoron against bollworm complex in cotton and its residue in/on cotton, Madurai.	2.42

STATE GOVERNMENT SCHEMES

1.	Agricultural Development Project -Tamil Nadu (TNADP) Seed production by Tamil Nadu Agricultural University, Kumulur, Killikulam, Vamban and Palur.	49.23
2.	Agricultural Development Project -Tamil Nadu (TNADP) Integrated watershed development component, Vellore and Athur.	5.75
3.	Fodder research component under -TNADP implementation with World Bank assistance, Department of Forage Crops, Coimbatore	1.00
4.	Inter specific hybridisation of Eucalyptus species for high biomass production, Mettupalayam.	0.60
5.	HADP -biofertilizer production, Ooty	5.40
6.	Pilot project for reclamation of problem soil in Manikandam block of Trichy district, Coimbatore.	0.60
7.	Establishment of culture nursery-starting of tissue culture laboratory for micropropagation of Sthalavirusham saplings, Coimbatore.	9.60
8.	AHRDP -Centre for Excellence in Olericulture, Coimbatore.	118.00
9.	TNADP -Seed Production Phase II -Coimbatore, Killikulam, Tindivanam, Trichy, Kumulur, Periyakulam, Vamban and Gudalur.	211.00

10.	World Bank- AHRDP, Coimbatore.	15.45
11.	HADP -Production of Breeder Seed in Carrot, Ooty	2.35
12.	Strengthening infrastructure facilities for Oilseed Production Programme, Tindivanam, Pattukkottai, Kattuthottam	22.30
13.	Tissue culture -Fruit Crops, Coimbatore	2.50
14.	DPAD -Watershed, Salem (KVK), Coimbatore	240.00
15.	SUBACS -Tissue Culture Unit Cuddalore & Sirugamani	10.00
16.	SPC -Production constraints & causes of low productivity in Tenant furms in T.N.,Coimbatore	2.96
17.	HADP - Development of cutflower in Nilgiris, Vijayanagaram.	2.50
18.	HADP - Production of Breeder Seeds of Carrot in Nilgiris, Vijayanagaram.	1.00
19.	HADP - Development of medicinal & Aromatic Plants by establishing Herbal Garden, Vijayanagaram	0.60
20.	HADP - Production of virus free Potato Seeds Vijayanagaram	0.50
21.	HADP - Mushroom Training & supply of mushroom spawn,Vijayanagaram.	1.00
22.	HADP -Scheme for identification of suitable beneficial microbial strains to regulate crops (Biofertilizers), Vijayanagaram.	4.40
23.	TEDA- Economic evaluation of water pumping windmills installed by TEDA in Salem, Dharmapuri, Erode & Coimbatore Districts.Coimbatore.	0.18
24.	IWDP - Comparative study to be taken by Director, CARDS, Coimbatore.	3.00
25.	TEDA - Assessment of Bio- mass potentials in Pollachi Vridhachalam, Coimbatore.	1.50

26.	Hort - Rejuvenation of Hill Banana cultivation in Dindugal District - Eradication of bunchy top diease - cost of summary - identification of healthy clumps and testing for virus etc, Periyakulam	5.80
27.	National scheme on Training for Rural youth of self-employment Strengthening of training infra structure facilities, Vridhachalam.	5.00
28.	HADP - Biological control of hilly crop pests and diseases, Vijayanagaram	3.00
29.	HADP - Development of Wood House, farm - Vijayanagaram	3.75
30.	HADP - Development of Integrated nutrient Management to alleviate secondary and micronutrient problem in Hill crops - Vijayanagaram	9.00
31.	HADP- Promotion of new Horticultural species for the Nilgiris District - Vijayanagaram	1.00
32.	Endowment scheme on micro-propagation of Tamarind and pomegranate and field evaluation of Micro propagated banana plants, Coimbatore.	0.95
33.	Sericulture Research Programme on the quality Improvement of cocoons and raw silk, Coimbatore.	3.00
34.	Assessment of loss of Ecology in Palar River Basin, Coimbatore.	13.75
35.	TNSC & ST - Popularisation of farm based technologies developed by TNAU among farmers, Coimbatore.	0.10.

APPENDIX - III

LIST OF RESEARCH PAPERS PUBLISHED

AGRICULTURAL BOTANY

1. Anna Durai.A., R.Latha, P.Jayamani, K.Thiyagarajan and M.Rangaswamy. 1998. Study of floral characters of thermosensitive genic male sterile lines in rice. Abstract presented in the First National Plant Breeding Congress. July 1-3, 1998. TNAU, Coimbatore - 3.

2. Amal D'Sam and C.R.Anandakumar. 1999. Identification of tissue culture friendly *Indica* rice to enable transformation. Seminor on Modem trends in Plant Sciences at Maeyiladuthurai. On 4-6 th March. p.51.

3. Amal D'sam. M.Punitha, P.Gowri, K.Ramesh and C.R.Anandakumar. 1999. Biotechnology in Biodiversity conservation. Seminor on National Conference on Biodiversity conservation and sustainable development at Erode Arts College, Erode 26-27th March. p:17.

4. Amirtha Deva Ratnam, A., P.Rangasamy, M.Subramanian, Sukanya Subramanian, G.Soundrapandian, S.Jebaraj, S.Sevagaperumal and S.Robin. 1997. MDU 5 A new high yielding short duration rice variety for dry and semidry areas. ***Madras Agric. 384*** (7) : 36-362.

5. Amirtha Devarathinam,A., S.Jebaraj, P.Rangasamy, and M.Subramanian, 1998. MDU 5 - A new high yielding short duration rice variety for dry and semidry areas. First National Plant Breeding Congress Breeding Strategies for 21st Century at TNAU Coimbatore. July 1-3, 1998. Abs. p:85.

6. Amudha, K., T.S.Raveendran and D.Krishnadoss. 1997. Genetic diversity in coloured linted cotton varieties. ***Madras Agric. J.84***(6) : 334-7.

7. Amudha, K., T.S.Raveendran and D.Krishnadoss. 1997. Genetic diversity in coloured cotton varieties. ***Madras Agric. J. 84***(6) : 334-337.

8. Amudha, K., T.S.Raveendran and D.Krishnadoss. 1997. Path anlysis in coloured cotton varieties ***Madras Agric. J.83***(11) : 693-6.

9. Amutha, K., S.Santha and M.Subramanian. 1998. Genetic improvement of Basmati rice. Paper presented in first National Plant Breeding Congress July 1-3, 1998. p.14.

10. Arumuganangarajan,A., S.Jebaraj and S.Backiyarani. 1998. Genetic variation and its breeding implication of Guar genotypes. First National Plant Breeding Congress Breeding Strategies for 21st Century TNAU, Coimbatore. July 1-3, 1998. Abs. p.86.

11. Arumugarangarajan,A., S.Jebaraj and S.Backiyarani. 1998. Character association and component analysis of seed yield in cluster bean. First National Plant Breeding Congress Breeding Strategies for 21st Century TNAU, Coimbatore. July 1-3, 1998. Abs. p.88.

12. Asok, S., P.Rangasamy, and S.Lakshminarayanan. 1998. Combining ability analysis in sunflower. First National Plant Breeding Congress Breeding Strategies for 21st Century at TNAU, Coimbatore. July 1-3, 1998. Abs. p.159.

13. Backiyarani, S., A.Amirthadevaratinam and S.Shanthi. 1998. Heterosis for physiological traits in sesame. Crop Research 15(1) : 73-76.

14. Backiyarani,S., M.Subrmanian and S.Shanthi. 1998. Selection response as assesed through inter generation correlation and regression in Sesame. ***Madras Agric. J. 18***(11, 12): 662-664.

15. Chitdeswari,T., M.Sheikdawood and D.Krishnadoss. 1998. Different levels of Nitrogen and Pottassium on the yield and nutrient availability of sorghum under rainfed vertison. ***Madras Agric. J.85***(2) : 145-147.

16. Chitdeswari,T., P.Muthusamy and D.Krishnadoss. 1998. Effect of different levels of phosphorus and VA Mycorrhiza on the yield and availability in rainfed cowpea. ***Madras Agric. J.85***(2) : 145-147.

17. Dijee Bastian, N.Nadarajan, A.Kalamani and M.Sakila. 1999. Studies on callus response in F2 seeds in rice. First National Plant Breeding Congress Breeding Strategies for 21 st Century TNAU, Coimbatore. July 1-3, 1998. Abs. p:

18. Elsy, C.R., M.Rangaswamy and K.N.Ganesan. 1998. Significance of stigma exsertion in enhancing outcrossing in male sterile rice lines. ***IRRN. 23***(1):25.

19. Ganesan, K., M.Subramanian, W.Wilfred Manuel and T.Sundaram. 1999. Correlation and Paths coefficient analysis of yield components in F_2 and F_3 generation of Tall and Dwarf rice cross. ***Oryza, 35***(4) : 329-332.

20. Ganesan, K., M.Subramanian, W.Wilfred Manuel and T.Sundaram. 1999. Genetics studies in F_2 and F_3 generation of semi dwarf rice crosses. ***Oryza, 35*** *(4) : 333-337.*

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